

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)	
)	
Application of Cellco Partnership d/b/a)	
Verizon Wireless and SpectrumCo LLC)	
For Consent To Assign Licenses)	WT Docket No. 12-4
)	
Application of Cellco Partnership d/b/a)	
Verizon Wireless and Cox TMI Wireless, LLC)	
For Consent To Assign Licenses)	

PETITION TO DENY OF T-MOBILE, USA, INC.

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SUMMARY

The Commission should deny the Applications of Verizon Wireless to acquire the AWS spectrum currently held by SpectrumCo and Cox to prevent an excessive concentration of mobile service spectrum holdings that is contrary to the public interest.

The Transactions come before the Commission at a critical time for the future of competition in mobile services, and particularly in mobile broadband. Verizon Wireless, with its extensive holdings of valuable low-frequency spectrum, already has a significant advantage in the industry migration to LTE as the new wireless broadband standard. Its smaller competitors do not have excess spectrum in which to first warehouse bandwidth and later deploy LTE. With current spectrum holdings, their effort to deploy LTE is more complicated, costly and time consuming. Moreover, its smaller competitors are largely relegated to the higher frequency ranges, which are more difficult to deploy due to their propagation and building penetration characteristics, and their ability to keep up with demand as the industry evolves to the LTE standard will be significantly capacity constrained, to the detriment of competition.

Now, Verizon Wireless is seeking to acquire a substantial block of unused AWS spectrum that is unlikely to provide any near-term benefits to Verizon Wireless customers (indeed, the company already holds other AWS spectrum and has not even put it to use yet). Rather, the principal impact of the acquisition would be to foreclose the possibility that this spectrum could be acquired by smaller competitors – such as T-Mobile – who would use it more quickly, more intensively, and more efficiently than Verizon Wireless. The acquisitions will limit the deployment of LTE by competitors of Verizon Wireless and the bandwidth available for such deployments. If these transactions go forward, the end result will be less LTE capacity available overall and reduced competition in the provision of LTE, which would be contrary to the public interest.

Spectrum is a scarce resource that is an essential input to wireless services. The Commission's public interest analysis of spectrum transactions consistently has recognized that excessive

concentration of spectrum holdings is contrary to the public interest. These Transactions pose a clear threat to competition, both under the Commission's public interest analysis and the related antitrust standards applied by the Department of Justice and Federal Trade Commission. Further, the Transactions are accompanied by joint marketing and joint venture agreements between Verizon Wireless and the cable company parties that require further investigation to determine whether any illicit market divisions have been negotiated.

Contrary to Applicants' urging, the Commission should not rubber-stamp these questionable Transactions merely because they satisfy the current "spectrum screen" as calculated with respect to previous cases. The present screen is inadequate as applied to the current wireless market, particularly because it fails to recognize the vast difference in value between low (below 1GHz) and high (above 1 GHz) frequency bands. This is like assessing landholdings in acres only without considering the differences in land value based on location. Continuing to apply the current spectrum screen will only allow Verizon Wireless to accumulate even more spectrum on top of an already dominant position, while checkmating crucial avenues for growth of its smaller competitors. Accordingly, T-Mobile urges the Commission to adopt a value-weighted spectrum screen (in addition to updating the inventory of "available" and "suitable" spectrum to take account of the evolution of mobile broadband services and recent spectrum developments), which would provide a rational basis for a more balanced and economically sound analysis of Verizon Wireless' proposed spectrum acquisitions. Such an analysis would show that Verizon Wireless' proposed acquisition will cause substantial harm to competition.

For these reasons, the Commission should find that Applicants have not sustained their burden of demonstrating public interest benefits sufficient to outweigh the significant harms that would result from these Transactions. These applications should be denied.

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PETITION TO DENY OF T-MOBILE, USA, INC.

T-Mobile, USA, Inc. (“T-Mobile”), by its undersigned counsel, hereby petitions the Commission to deny the above-captioned applications for consent to assign certain wireless spectrum licenses, pursuant to 47 USC §§ 309(d) and 310(d), and the Commission’s rules.

I. STATEMENT OF FACTS AND BACKGROUND

A. The Applications

In the Applications, Cellco Partnership d/b/a Verizon Wireless (“Verizon Wireless”) and SpectrumCo¹ request consent to assign 122 Advanced Wireless Services (AWS-1) licenses to Verizon Wireless from SpectrumCo; and Verizon Wireless and Cox² seek Commission consent

¹ SpectrumCo is a joint venture among subsidiaries of Comcast Corp. (“Comcast”), Time Warner Cable Inc. (“Time Warner Cable”), and Bright House Networks, LLC (“Bright House”). SpectrumCo is owned by Comcast (63.6 percent), Time Warner Cable (31.2 percent), and Bright House (5.3 percent). *See* Application of Cellco Partnership d/b/a Verizon Wireless and SpectrumCo LLC for Consent to Assign Licenses, File No. 0004993617, Description of Transaction and Public Interest Statement at 2 (“*SpectrumCo Public Interest Statement*”).

² Cox TMI Wireless, LLC is a subsidiary of Cox Communications, Inc., which Cox states is the third largest cable company in the country, and a long-time provider of high-speed Internet and local telephone services. *See* Application of Cellco Partnership d/b/a Verizon Wireless and

to assign 30 more AWS-1 licenses to Verizon Wireless from Cox (the “Transactions”). These licenses are not being used by SpectrumCo³ or Cox (together, the “Assignors”) to provide any services, but have been lying fallow since they were granted in 2006.⁴

In its Public Notice on this transaction, the Commission noted:

Preliminary review of the Verizon Wireless-SpectrumCo Application indicates that the proposed assignment of licenses to Verizon Wireless would result in Verizon Wireless acquiring either 20 or 30 megahertz of spectrum in 572 CMAs covering 259.7 million people (or approximately 84% of the U.S. population). Preliminary review of the Verizon Wireless-Cox Application indicates that the proposed assignment of licenses to Verizon Wireless would result in Verizon Wireless acquiring 20 megahertz of spectrum in 90 CMAs covering 30 million people (or approximately 10% of the U.S. population).⁵

In addition to the spectrum transfers, Verizon Wireless has entered into marketing arrangements with SpectrumCo principals Comcast, Time Warner Cable, and Bright House, and separately with Cox, that reportedly include agreements under which these companies and

Cox TMI Wireless, LLC for Consent to Assign Licenses, File No. 0004996680, Public Interest Statement at 2 (“*Cox Public Interest Statement*”). At the time SpectrumCo was granted, the AWS-1 licenses that are the subject of the Verizon Wireless-SpectrumCo Application, an affiliate of Cox Communications, Inc. (“Cox Communications”) held a 10.441% equity interest in SpectrumCo. *See* Application of SpectrumCo LLC, ULS File No. 0002774487, filed October 4, 2006, and *Cox Public Interest Statement* at 3. In 2009, the Cox Communications affiliate exited the SpectrumCo venture, receiving as part of its redemption value the AWS-1 licenses that are the subject of the Verizon Wireless-Cox Application. *Id.*

³ The CFO of Comcast, the largest investor in SpectrumCo, has been quoted in the trade press as telling a Citigroup conference: “We never really intended to build that spectrum, so therefore [selling it to Verizon Wireless] is a really good use of that spectrum.” *Communications Daily*, Jan. 19, 2001, at 1.

⁴ *SpectrumCo Public Interest Statement* at 1-3; *Cox Public Interest Statement* at 1-3. Because the legal and policy arguments asserted by Applicants with respect to both Transactions are substantially similar, hereafter we will cite to only the *SpectrumCo Public Interest Statement*.

⁵ *Cellco Partnership d/b/a Verizon Wireless, SpectrumCo, LLC And Cox TMI Wireless, LLC Seek FCC Consent To The Assignment Of AWS-1 Licenses*, Public Notice, WT Docket No. 12-4, DA 12-67 (rel. Jan. 19, 2012) (“*Public Notice*”).

Verizon Wireless will sell each other's cable and wireless services and engage in joint research and development (the "JMAs").⁶ Applicants claim that the JMAs have no bearing on whether the spectrum sale is in the public interest and do not require Commission approval but, at the Commission's request, Applicants have submitted the agreements into the record as "Highly Confidential" materials. Even though these materials are subject to a restrictive Protective Order, the copies submitted into the record appear to be heavily redacted.⁷

Verizon Wireless enters the Transactions as the largest mobile service provider in the United States by any measure. As of the Commission's last Annual Report on Wireless Competition, Verizon Wireless covered some 285 million people with its voice network, and 270 million with its broadband data network.⁸ As of the end of 2010, Verizon Wireless reportedly accounted for over 30 percent of wireless subscribers and revenues nationwide, and for some 45 percent of the entire industry's EBITDA. On a MHz-POP basis, Verizon Wireless holds approximately 43 percent of all 700 MHz spectrum in the nation, and 48 percent of cellular spectrum; these are the two most suitable (and valuable) bands for mobile broadband services.⁹ AT&T is a distant second in these categories, while the third and fourth largest carriers by subscribers, Sprint and T-Mobile, are at a significant disadvantage, because they hold *no spectrum at all* in these highly desirable "beachfront" bands.¹⁰ Additionally, Verizon Wireless already holds a considerable

⁶ Declaration of Judith Chevalier at para. 8 (attached hereto as Exhibit A) ("Chevalier Decl.").

⁷ See Letter of Media Access Project *et al.* to Marlene H. Dortch, FCC, WT Docket No. 12-4 (filed Feb. 7, 2012).

⁸ *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, Fifteenth Annual Report, WT Docket No. 10-133, FCC 11-103, 26 FCC Rcd 9664, at para. 30, Tables 1 and 2 (2011) ("*Fifteenth Annual Report*").

⁹ *Fifteenth Annual Report* at para. 288 (Tables 27 and 28), and paras. 289-295.

¹⁰ *Id.* at para. 288 (Tables 27 and 28). We note, however, that Sprint holds 14 MHz in the 800 MHz SMR band. T-Mobile also holds one rural area license in the cellular band.

amount of AWS spectrum, though it does not use that spectrum today in providing services.¹¹ The AWS band is a critical one for T-Mobile, as it is where it has deployed 3G and 4G services, and for many of the other competitive smaller carriers.

Verizon Wireless, with its extensive holdings of valuable low-frequency spectrum, already has a significant advantage in the industry migration to LTE as the wireless broadband standard. Its smaller competitors do not have excess spectrum in which to deploy LTE, which makes their effort to do so more costly, time consuming, and complex. Moreover, the higher frequency ranges used by T-Mobile and most of Verizon Wireless' other competitors are more difficult to deploy due to their propagation and building penetration characteristics, and those companies' ability to keep up with demand as the industry evolves to the LTE standard could well face significant capacity constraints, which would negatively impact their ability to compete.¹²

For these reasons, T-Mobile and many other smaller carriers, as well as their customers, will be foreclosed – perhaps irrevocably – from critically important spectrum opportunities if the Transactions are permitted to proceed. By effectively cornering what remains of the available AWS spectrum, Verizon Wireless would be preventing T-Mobile and other smaller competitors from the opportunity of potentially obtaining the additional spectrum to meet their projected customers' needs, effectively keeping them from growing and, ultimately, from continuing to be a vibrant competitive force. The effects of this foreclosure would be most dramatic on competitors who seek to offer 4G broadband services, in particular using LTE. Allowing Verizon Wireless to continue to aggregate spectrum unchecked would necessarily preclude access to this spectrum by smaller competitors who will use it more quickly, intensively, and efficiently than

¹¹ Chevalier Decl. at para. 35.

¹² See, e.g., Declaration of Neville R. Ray at paras. 4, 17, 19, 22-23 (attached hereto as Exhibit B) ("Ray Decl.").

Verizon Wireless. The acquisition effectively will limit the bandwidth available for the deployment of LTE by competitors of Verizon Wireless. The end result will be less LTE capacity available overall in the wireless market and therefore less competition, contrary to the public interest.

B. T-Mobile

T-Mobile, a wholly owned subsidiary of Deutsche Telekom AG (DT), is headquartered in Bellevue, Washington, and offers nationwide wireless voice and data services to individual and business customers. T-Mobile is the fourth largest wireless carrier in the United States. Unlike Verizon Wireless, with the exception of a single cellular license, T-Mobile's spectrum holdings are entirely in the PCS and AWS bands, with no spectrum at all in the bands below 1 GHz.¹³

Notwithstanding this relative spectrum disadvantage, T-Mobile has been making very efficient use of its spectrum to provide high quality services to its approximately 34 million subscribers.¹⁴ However, T-Mobile's spectrally efficient techniques can only take it so far. To deploy new technology while it is using all its spectrum bands for current services, T-Mobile will need to undertake resource-intensive techniques to repurpose spectrum from one technology to another, which will be challenging to execute. Even with the additional spectrum that T-Mobile is due to receive from AT&T (subject to Commission approval), it will face serious constraints in seeking to expand its delivery of the latest generation of broadband services. Thus, the availability of additional spectrum to meet the needs of its customers is of critical importance to the future growth and success of T-Mobile, as it is for most other competitive wireless carriers.

¹³ *Fifteenth Annual Report* at para. 288 (Tables 27 and 28).

¹⁴ *U.S. v. AT&T, Inc.*, Second Amended Complaint, No. 1: 11-cv-01560, at paras. 28-29 (D.D.C., filed August 31, 2011), *available at* <http://www.justice.gov/atr/cases/f275700/275756.pdf> ("*DOJ Complaint*") ("T-Mobile has ... been an innovator in terms of network development and deployment. ... Such investments in new network technologies ... are valuable to consumers as they increase the efficiency of spectrum use and allow for more mobile wireless services output.").

II. LEGAL STANDARD AND PUBLIC INTEREST FRAMEWORK

In deciding whether to grant the Applications, the Commission must determine, pursuant to Section 310(d) of the Communications Act, “whether the Applicants have demonstrated that the proposed transfers of control of licenses and authorizations will serve the public interest, convenience, and necessity.”¹⁵ The Applicants “bear the burden of proving, by a preponderance of the evidence, that the proposed transaction, on balance, will serve the public interest.”¹⁶ In making this determination, the Commission must “consider whether [the merger] could result in public interest harms by substantially frustrating or impairing the objectives or implementation of the Communications Act or related statutes [and] then employ a balancing test weighing any potential public interest harms of the proposed transaction against any potential public interest benefits.”¹⁷

As explained in the Commission’s recent decisions reviewing mergers in the mobile wireless industry, the Commission’s public interest evaluation also “necessarily encompasses the ‘broad aims of the Communications Act.’”¹⁸ These broad aims, among other things, include:

¹⁵ *Application of AT&T Inc. and Qualcomm Inc. for Consent to Assign Licenses and Authorizations*, Memorandum Opinion and Order, WT Docket No. 11-18, FCC 11-118, at para. 23 (2011) (citing 47 U.S.C. § 310(d) (“*AT&T-Qualcomm Order*”)); *Applications of Cellco Partnership d/b/a Verizon Wireless and Atlantis Holdings LLC For Consent to Transfer Control of Licenses, Authorizations, and Spectrum Manager and De Facto Transfer Leasing Arrangements and Petition for Declaratory Ruling that the Transaction is Consistent with Section 310(b)(4) of the Communications Act*, Memorandum Opinion and Order and Declaratory Ruling, 23 FCC Rcd 17444, at para. 26 (2008) (citations omitted) (“*Verizon Wireless-ALLTEL Order*”).

¹⁶ *AT&T-Qualcomm Order* at para. 23 (citations omitted); *Verizon Wireless-ALLTEL Order* at para. 26 (citations omitted).

¹⁷ *AT&T-Qualcomm Order* at para. 23 (citations omitted); *see also Verizon Wireless-ALLTEL Order* at para. 26 (citations omitted).

¹⁸ *AT&T-Qualcomm Order* at para. 24 (citing *AT&T Inc. and Cellco Partnership d/b/a Verizon Wireless Seek FCC Consent To Assign or Transfer Control of Licenses and Authorizations and Modify a Spectrum Leasing Arrangement*, Memorandum Opinion and Order, 25 FCC Rcd 8704, at para. 23 (2010) (“*AT&T-Verizon Wireless Order*”)) (additional citations omitted).

a deeply rooted preference for preserving and enhancing competition in relevant markets, accelerating private sector deployment of advanced services, promoting a diversity of license holdings, and generally managing the spectrum in the public interest. Our public interest analysis also often entails assessing whether the proposed transaction will affect the quality of communications services or will result in the provision of new or additional services to consumers. In conducting this analysis, we may consider technological and market changes, and the nature, complexity, and speed of change of, as well as trends within, the communications industry.¹⁹

Under Commission precedent, a “competitive analysis” remains an important component of the public interest review.²⁰ This competitive analysis is broader than the DOJ’s review under antitrust laws in that, unlike the DOJ, the Commission “consider[s] whether a transaction will enhance, rather than merely preserve, existing competition, and takes a more extensive view of potential and future competition and its impact on the relevant market.”²¹

The awareness that a transaction may have both “harmful and beneficial consequences,”²² and that these must be weighed against each other, is central to the Commission’s review. “[C]ombining assets may allow a firm to reduce transaction costs and offer new products, but it may also create market power, create or enhance barriers to entry by potential competitors, and create opportunities to disadvantage rivals in anticompetitive ways.”²³ It is not unusual that license transfer applicants claim that their proposed transaction will enable them to achieve new efficiencies and roll out new products, as Applicants have done here. Indeed, it is virtually impossible to think of a significant license transfer in this industry in which the applicants did *not* make such claims. But it is vital that the Commission strictly scrutinize and test the validity

¹⁹ *AT&T-Qualcomm Order* at paras. 24, 27 (citations omitted).

²⁰ *Id.* at para. 25 (citations omitted).

²¹ *AT&T-Qualcomm Order* at para. 25 (citations omitted), *see also id.* at para. 37; *AT&T-Verizon Wireless* at para. 28.

²² *AT&T-Qualcomm Order* at para. 26 (citations omitted).

²³ *Verizon Wireless-ALLTEL Order* at para. 29.

of these claims, assess carefully the harms to the public interest that the Transactions threaten, and weigh the negative consequences of the Transactions against any positive effects.

Because, as shown in the following sections, the Applicants have not met their burden to show that the benefits of the Transactions to the public interest clearly outweigh the harms, the Applications should be denied.

III. THE COMMISSION SHOULD CONDUCT A FULL ANALYSIS OF THE TRANSACTIONS IN LIGHT OF SIGNIFICANT POTENTIAL HARMS TO COMPETITION

The Applicants argue that the Commission's review of the Transactions "should be limited" because, in their view, there are no potential anti-competitive effects.²⁴ They contend that the "screens" customarily applied by the Commission to review mobile services transactions are either not applicable here (the HHI-based screens) or not triggered except in a few markets (the spectrum screen).²⁵ Thus, they contend that under Commission precedent "there is 'clearly no competitive harm[,]'" and therefore "no further review is appropriate[.]"²⁶ For the reasons stated below, this conclusion is incorrect; evidence of competitive harm is abundant, and competitive inquiry is essential.

Contrary to the Applicants' urging, the Commission should conduct a full analysis of the potential public interest harms of the Transactions because the current spectrum screen is not necessarily probative of the likelihood of competitive harm in this case. "The Commission examines the effects of spectrum aggregation on the marketplace on a case-by-case basis."²⁷ The

²⁴ *SpectrumCo Public Interest Statement* at 4.

²⁵ *Id.* at 24-25.

²⁶ *Id.* at 25 (quoting *Sprint Nextel Corporation and Clearwire Corporation Applications for Consent to Transfer Control of Licenses, Leases, and Authorizations*, Memorandum Opinion and Order, 23 FCC Rcd 17570, at para. 76 (2008) ("*Sprint Nextel-Clearwire Order*") (additional citations omitted).

²⁷ *AT&T-Qualcomm Order* at para. 31.

HHI and spectrum screens are not substantive standards, but merely diagnostic tools used to help the Commission identify potential harms.²⁸ The spectrum screen as currently applied is no longer serving its intended role of identifying markets in which “no competitive harm” could result from the Transactions, and is in need of significant retooling.²⁹ T-Mobile presents its proposals for revising the screen in Section IV, below.

Independent of the spectrum screen, however, it is essential that the Commission address fully the evidence of potential competitive harms associated with the Transactions. The Commission’s public interest analysis of license assignments and transfers “is informed by but not limited to traditional antitrust principles.”³⁰ Evidence that the Transactions pose significant potential for competitive harm under antitrust principles, then, merits serious consideration and full investigation by the Commission, even if it does not in itself determine the outcome of that investigation.

A. The Transactions Will Harm the Public Interest by Permitting Undue Concentration of Spectrum by Verizon Wireless

The Transactions represent a major spectrum-grab by Verizon Wireless, the carrier that already enjoys the most valuable spectrum resources. In its Public Notice, the Commission stated that the proposed SpectrumCo Transaction “would result in Verizon Wireless acquiring either 20 or 30 megahertz of spectrum in 572 CMAs covering 259.7 million people (or approximately 84%

²⁸ As Chairman Genachowski recently observed, the screen “has no actionable effect; it is merely a tool used to narrow the Commission’s focus on markets where there may be a higher level of concern.” Letter from FCC Chairman Julius Genachowski to Chairman Fred Upton, Committee on Energy and Commerce, at 2 (Dec. 20, 2011).

²⁹ Chevalier Decl. at para. 24-27, showing that measurement of spectrum holdings alone is not sufficient to detect all potential anti-competitive impacts of transactions.

³⁰ *Applications of Comcast Corporation, General Electric Company and NBC Universal, Inc. for Consent to Assign Licenses and Transfer Control of Licensees*, Memorandum Opinion and Order, 26 FCC Rcd 4238, at para. 24 (2011); *see also Application of GTE Corp., Transferor, and Bell Atlantic Corp., Transferee*, Memorandum Opinion and Order, 15 FCC Rcd 14032, at para. 23 (2000).

of the U.S. population)”; and the Cox Transaction “would result in Verizon Wireless acquiring 20 megahertz of spectrum in 90 CMAs covering 30 million people (or approximately 10% of the U.S. population).”³¹

In these Transactions, Verizon Wireless seeks to extend its control of an essential and scarce resource – indeed, the *most* essential resource – necessary to compete in this market, and at the same time to undercut the potential that new rivals could enter this market, or that firms already in the market could use this spectrum to continue to compete vigorously as demand for bandwidth grows. Further, it is doing so at a critical time as LTE technology is just beginning to have an impact on the market. Broadband services are the future of the mobile industry, and Verizon Wireless seeks to occupy key spectrum before any of its rivals have a chance to use that resource to roll out their own LTE networks.

The FCC has already found that there are significant demands for additional spectrum to ensure continued growth and healthy competition in the mobile broadband market. For example, the Commission’s Fifteenth Annual Report on Wireless Competition stressed that:

As noted in the *National Broadband Plan*, making sufficient spectrum available to meet growing spectrum needs is integral to enabling network expansion and technology upgrades by providers.³²

[C]urrent spectrum forecasts suggest that mobile broadband growth will likely outpace technology and network improvements by an estimated factor of three, leading to a spectrum deficit that is likely to approach 300 megahertz within the next five years.³³

³¹ See note 5, above (emphasis added).

³² *Fifteenth Annual Report* at para. 267.

³³ *Id.* at Executive Summary, Spectrum.

Chairman Genachowski has recognized an imminent need to free up spectrum for mobile broadband.³⁴

In light of these constraints on the ability of those needing spectrum to obtain it, it is imperative that available spectrum be used efficiently and that transactions to redistribute this critical asset achieve results that are consistent with the Commission's pro-competitive goals for this industry. Consolidation of spectrum by large providers may reduce the motivation for efficient use of the spectrum that is already available. Economic analysis confirms that, in an industry in which production is constrained by access to a scarce input, a dominant firm may have an incentive to hoard that resource rather than allow its competitors to use it, resulting in less than socially-optimal levels of production.³⁵

Even without the spectrum it proposes to acquire in the Transactions, Verizon Wireless already has a tremendous advantage over T-Mobile and other competitors in spectrum holdings. Verizon Wireless holds significantly greater allocations of spectrum than T-Mobile in nearly every major market today, even after accounting for spectrum that T-Mobile anticipates receiving from AT&T, and approval of these Transactions would increase the disparity. Moreover, and crucially, merely comparing gross spectrum holdings considerably understates the actual competitive disparity. As will be discussed below, different types of spectrum possess very different propagation characteristics, with the result that some types of spectrum can be built out to provide mobile broadband and other advanced services much more efficiently and cost-

³⁴ Remarks of FCC Chairman Julius Genachowski, 2012 Consumer Electronics Show, Las Vegas, Jan. 11, 2012, *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0112/DOC-311974A1.pdf (stating that “we need to unleash spectrum so that mobile broadband can achieve its vast potential in driving economic growth and job creation”); *see e.g. Connecting America: National Broadband Plan, Goals for A High Performance America*, DA 09-1420, at Chapter 4 (rel. June 25, 2009), *available at* <http://www.broadband.gov/plan/> (“*National Broadband Plan*”) (including recommendations for making more spectrum available).

³⁵ Chevalier Decl. at para. 39.

effectively than other types.³⁶ And Verizon Wireless already holds significantly more of this “beachfront” spectrum than any other carrier.

Indeed, to illustrate the disparity, Verizon Wireless has substantial holdings in the higher-quality bands below 1 GHz (cellular and 700 MHz), while T-Mobile’s are entirely in the bands above 1 GHz. If the Transactions are permitted to go forward as proposed, the relative spectrum holdings of Verizon Wireless and T-Mobile in the Top 25 CMAs would be as set forth in Table 1:

Table 1: Post-Merger Spectrum Holdings

	Cellular Market Area (“CMA”)	Verizon Wireless Spectrum			T-Mobile Spectrum ³⁷		
		Low Band	High Band	Total	Low Band	High Band	Total
1	Los Angeles-Long Beach/Anaheim-CA	71	40	111	0	60	60
2	New York, NY-NJ/Nassau-Suffolk, NY/Newark	59	80	139	0	50	50
3	Chicago, IL	59	50	109	0	60	60
4	Dallas-Fort Worth, TX	34	50	84	0	70	70
5	Houston, TX	59	50	109	0	80	80
6	Philadelphia, PA	59	60	119	0	50	50
7	Atlanta, GA	59	50	109	0	80	80
8	Washington, DC-MD-VA	59	70	129	0	50	50
9	Detroit/Ann Arbor, MI	59	60	119	0	60	60
10	Boston-Lowell-Brockton-Lawrence-MA-NH	47	70	117	0	60	60
11	San Francisco-Oakland, CA	59	30	89	0	80	80
12	Miami-Fort Lauderdale-Hollywood, FL	46	70	116	0	60	60
13	Phoenix, AZ	72	30	102	0	80	80
14	Minneapolis-St. Paul, MN-WI	59	80	139	0	60	60
15	San Diego, CA	47	40	87	0	75	75
16	Denver-Boulder, CO	59	40	99	0	70	70

³⁶ See Section V, below.

³⁷ These figures include spectrum that T-Mobile is due to receive from AT&T (subject to Commission approval).

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17	Baltimore, MD	59	70	129	0	60	60
18	Seattle-Everett, WA	47	70	117	0	70	70
19	St. Louis, MO-IL	47	30	77	0	40	40
20	Tampa-St. Petersburg, FL	59	70	129	0	65	65
21	San Juan-Caguas, PR	--	--	--	0	55	55
22	Portland, OR-WA	47	40	87	0	70	70
23	Sacramento, CA	59	30	89	0	75	75
24	Pittsburgh, PA	47	60	107	0	60	60
25	Las Vegas, NV	47	40	87	0	60	60

In a number of these markets, Verizon Wireless' spectrum holdings would be more than twice, and in some nearly three times, T-Mobile's. And these differences actually understate the real competitive disparities since in most of these markets more than half of Verizon Wireless' holdings are in the more valuable lower bands.

Accordingly, if the Commission approves the Transactions and allows Verizon Wireless to keep this spectrum from its competitors, the effect will be to give Verizon Wireless an advantage in spectrum that will make it significantly more difficult for other carriers to compete going forward. Assignors' spectrum is likely to be the only significant unused spectrum to become available for many months, if not years. Smaller carriers' efforts to carry out complex and expensive measures to wring the maximum efficiency out of their spectrum to provide broadband wireless services and deploy new technologies can only take them so far. At some point the extra costs, longer timeframes, customer impacts, and other inefficiencies inherent in such "heroic efforts" have impacts on their ability to compete aggressively in the market.

On the other hand, unlike T-Mobile and other carriers in a similar situation, Verizon Wireless has no pressing need for this spectrum. Verizon Wireless has said repeatedly before this transaction that it has sufficient spectrum for the near and medium term. Indeed, as recently as this past November, *one month before entering into this transaction*, Verizon Wireless was

confidently reiterating this point.³⁸ That is because Verizon Wireless today, even before these Transactions, is sitting on valuable spectrum which it has not deployed for any use as yet. These Transactions would permit Verizon Wireless to warehouse even more scarce spectrum for future growth, instead of putting it to immediate use for the benefit of consumers.³⁹

Crucially, these Transactions would eliminate the only sizable allocated but unused block of spectrum that would be suitable for 4G deployment. Verizon Wireless' own Executive Director of Network Strategy acknowledged as much in his declaration in this proceeding:

[T]he Government has not made additional spectrum blocks available for mobile wireless services though spectrum auctions since the 700 MHz auction - an auction that concluded nearly four years ago. Although demand for wireless networks has been growing exponentially, the Government has not brought any "new" spectrum to market. Moreover, there is no imminent spectrum auction that [a carrier] can look to in order to meet its growing spectrum needs. But even were the Government to identify suitable spectrum in 2012, it would (based on past history) take several years to bring it to auction. Even more problematic, with many potential blocks of spectrum, significant issues would need to be resolved to clear in-

³⁸ See, e.g., *How soon will wireless operators run out of capacity?* FierceWireless, Nov. 3, 2011, available at www.fiercewireless.com/story/how-soon-will-wireless-operators-run-out-capacity/2011-11-03 (reporting on a presentation by Verizon Wireless Chief Technology Officer David Small at the Open Mobile Summit in November 2011). See also, e.g., *Verizon CEO talks up spectrum, downplays Sprint iPhone*, CNET News, Sept. 21, 2011, available at http://news.cnet.com/8301-30686_3-20109452-266/verizon-ceo-talks-up-spectrum-downplays-sprint-iphone/.

³⁹ It would be particularly ironic to allow Verizon Wireless to warehouse this additional spectrum, because it would affirmatively reward such behavior by other market participants. There is some indication that at least one of the Assignors was merely acquiring the spectrum to sell it. Comcast's CFO has been quoted in the trade press as telling a Citigroup conference: "We never really intended to build that spectrum, so therefore [selling it to Verizon Wireless] is a really good use of that spectrum." Communications Daily, Jan. 19, 2001, at 1.

cumbent users, further delaying potentially for years the full utility of that spectrum.⁴⁰

It is likely no coincidence that Verizon Wireless signed this deal while the AT&T/T-Mobile transaction was still pending, so that T-Mobile was unable to compete to purchase this spectrum. This opportunistic accumulation of the last available spectrum is simply an attempt by Verizon Wireless to stockpile this essential resource to keep it out of its competitors' hands and to cement an overwhelming competitive advantage. The Commission's focus should be on the public interest – including the interest in more effective competition – inherent in a more appropriate balancing of spectrum in competitors' hands. With that, the Commission should not countenance these Transactions.

B. The Proposed Transactions Will Injure Competition and Consumers in Violation of the Antitrust Laws

Although Applicants have the burden of proving that the Transactions are in the public interest, their analysis of competitive impacts is superficial. They assert that there can be no injury to competition simply because Verizon Wireless is not acquiring a mobile service competitor. Applicants state that “[c]onsumers will continue to have all of the same choices among wireless providers that they do today.”⁴¹ Yet this argument ignores the fact that merger analysis is forward-looking. The significance of the availability of scarce spectrum on competition among wireless competitors goes far beyond whether the current holder of such spectrum is using it. Any analysis of an acquisition of spectrum must take into account how that transaction may raise barriers to efficient and timely expansion, or inhibit innovation or the provision of new competitive services to consumers. A proper antitrust assessment of the proposed transaction reveals that

⁴⁰ Application of Cellco Partnership d/b/a Verizon Wireless and Cox TMI Wireless, LLC for Assignment of Licenses, File No. 0004996680, Declaration of William H. Stone, Executive Director, Network Strategy, Verizon Wireless, at para. 15 (“*Stone Declaration*”).

⁴¹ *SpectrumCo Public Interest Statement* at 5.

it would substantially lessen competition in violation of the Clayton Act, especially when viewed in the broader context of the simultaneous joint marketing agreements between the parties.

As Applicants concede, in this market, vigorous competition is “essential to ensuring continued innovation and maintaining low prices.”⁴² Access to spectrum is a prerequisite to competition. While not eliminating an entity currently marketing wireless services, the Transactions pose serious harm to competition and to consumer welfare in the wireless market by permitting a dominant carrier to foreclose acquisition of spectrum by smaller rivals. The result of this will be lower quality of services, decreased product variety, increased prices, and stunted innovation by removing the incentives to invest in capacity and technological improvements. An evaluation of competitive harm from these Transactions must focus on a deeper analysis of the actual competitive effects, and not be limited by a rote calculation of spectrum holdings.

The limitation on spectrum capacity is one of the greatest impediments to robust competition among wireless providers in the United States. Indeed, Chairman Genachowski has recognized the imminent need to free up spectrum for mobile broadband.⁴³ Thus, to ensure the future of mobile activity, it is imperative that spectrum is available to providers who can deploy it innovatively and efficiently in the near term. Approving the Transactions is problematic not only due to the increase in Verizon Wireless’ own holdings, but because it would simultaneously deprive more efficient users of the spectrum they need to be and remain competitive. The acquisitions, thus, potentially foreclose a necessary input from competitors who could make immediate use of the spectrum.

⁴² *DOJ Complaint* at para. 1.

⁴³ Julius Genachowski, Chairman, FCC, Remarks on Broadband (Mar. 16, 2011), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2011/db0316/DOC-305225A1.pdf (“Spectrum is our invisible infrastructure; it’s the oxygen that sustains our mobile communications.”).

There is ample precedent supporting a conclusion that an acquisition of an input can cause competitive harm in violation of the Clayton Act. The FTC and DOJ have found competitive harm with transactions that block access to necessary inputs, in some cases requiring divestitures to remedy this effect.⁴⁴

In 1998, the DOJ challenged an acquisition of unused satellite television spectrum by a consortium of cable companies on the ground that the cable companies would use the spectrum in a less competitive manner than would other purchasers.⁴⁵ After filing suit, the cable consortium abandoned the acquisition. The spectrum was subsequently acquired by another satellite television provider, which was able to use it to expand its market position vis-a-vis the dominant cable providers.⁴⁶ Verizon Wireless' proposed acquisition of this spectrum threatens competition in exactly the same manner.

Particularly instructive to these Transactions, the DOJ recently issued comments supporting the Federal Aviation Administration's required slot divestiture in the LaGuardia/Washington-Reagan slot exchange (takeoff-and-landing rights) between Delta and US Airways.⁴⁷ The DOJ

⁴⁴ Since the early 1990s, the DOJ has been challenging the competitive harm in denying access to necessary inputs, requiring merging parties to take some action to allow access to the input. See ABA Section of Antitrust Law, *Antitrust Law Developments*, p. 383 (6th ed. 2007) (listing various consent decrees requiring access to necessary inputs).

⁴⁵ *United States v. Primestar Inc. et al.*, Complaint, No. 1-98CV01193 (D.D.C. May 12, 1998).

⁴⁶ Courts have recognized similar theories in the context of private antitrust litigation. In *Virginia Vermiculite Ltd. v WR Grace & Co.*, 156 F.3d 535 (4th Cir. 1998), defendant WR Grace donated scarce vermiculite reserves to a non-profit dedicated to preventing vermiculite mining. Plaintiff competitor sued under a theory that the donation constituted an unlawful competitive act. The district court dismissed but on appeal, the Fourth Circuit reversed finding that keeping such "reserves" from a competitor could be regarded as a violation of the antitrust laws.

⁴⁷ Comments of the DOJ, Notice of Petition for Waiver of the Terms of the Order Limiting Scheduled Operations at LaGuardia Airport and Solicitation of Comments on Grant of Petition with Conditions, No. FAA-2010-0109, Mar. 24, 2010, *available at* <http://www.justice.gov/atr/public/comments/257463.pdf>.

was concerned that the parties were engaging in “slot hoarding,” in part intending to keep new entrants from the market. The DOJ noted that the parties did not need the slots and that other entrants would use them more efficiently, thereby providing a net benefit for consumers.⁴⁸

C. The Joint Venture Arrangements Suggest Additional Injury to Competition

The fact that Verizon Wireless and Assignors entered into joint marketing agreements simultaneous with these Transactions increases the likelihood that the Transactions violate the Clayton Act (and potentially the Sherman Act), and are thus against the public interest. Despite Applicants’ contention that these agreements are unrelated, the totality of this collaboration must be taken into consideration to fully understand the competitive effects. While Applicants attempt to argue that spectrum acquisition is technically an independent transaction, the simultaneous nature of these two very significant agreements suggests that the overall context of the bargains among the Applicants must be considered in determining the actual effects on competition and what is in the public interest.

At least in effect, this has all the hallmarks of a pure horizontal allocation of markets. From the limited information available, it appears as though Verizon, the majority owner of

⁴⁸ In a similar case, the FTC filed suit against Mylan Laboratories, finding harm to competition in certain exclusive supplier contracts blocking access to generic manufacturers and enabling Mylan to increase prices. *FTC v. Mylan Laboratories*, 62 F. Supp. 2d 25 (D.D.C. 1999). *See also In re Lorazepam & Clorazepate Antitrust Litig.*, 467 F. Supp. 2d 74 (D.D.C. 2006) (involving several insurance companies and health plans that opted out of a class action settlement and prevailed against Mylan). Likewise, in the merger of NBC Universal and Comcast Corp., the DOJ required the parties, *inter alia*, to provide competitors with access to NBCU content because the DOJ determined that such content was necessary to compete effectively in the market. *United States v. Comcast*, Final Judgment, No. 1:11-cv-00106 (D.D.C. Sept. 1, 2011), available at <http://www.justice.gov/atr/cases/f274700/274713.pdf>. As a result, the DOJ deemed divestitures necessary to protect consumers from future competitive harm. *See also United States v. Ticketmaster Entertainment Inc.*, Final Judgment, No. 1:10-cv-00139 (D.D.C. Jul. 30, 2010), available at <http://www.justice.gov/atr/cases/ticket.htm> (deeming Ticketmaster’s long-term exclusive contracts with venues as a limitation on access to a necessary element of the industry, and therefore requiring a number of divestitures and prohibiting certain conduct to address this foreclosure).

Verizon Wireless, has agreed (tacitly if not expressly) to halt its extensive efforts to expand into the cable business and the cable companies have, in turn, traded their control of valuable spectrum in exchange for this protection of their cable markets. It has been publicly reported that, coincident with acquiring the cable companies' spectrum, thereby eliminating potential new competition in mobile wireless, Verizon ended its FiOS build out plans and terminated its agreement to resell satellite television.⁴⁹ This series of acts appears to limit Verizon's activity as a potential competitor in the video market and limit the cable companies' role as potential competitors in the wireless market, while at the same time foreclosing competing providers from one of the only available sources of spectrum. As a result of this "triple play," competition in both markets will be substantially reduced. The antitrust laws have long condemned such agreements, even among potential competitors.⁵⁰

These concerns are exacerbated by the secrecy shrouding the terms of the agreements. Without the details of the numerous parallel deals, the conclusion that this is an improper market allocation cannot be dismissed. Supporting this conclusion is the fact that Verizon Wireless does not plan to use this spectrum in the near term and has significant incentives to keep it from competitors who would deploy it more readily.⁵¹

While the spectrum acquisition independently impairs competition, the totality of these agreements suggests that the injury to competition extends even further through market allocation – an agreement by Verizon Wireless not to compete against the sellers in exchange for their sale of the spectrum and corresponding implied promise not to compete against Verizon Wireless

⁴⁹ Neal Gomba, *Verizon's Play for Spectrum and Why You Should Be Worried*, ExtremeTech.com (Dec. 23, 2011), available at <http://www.extremetech.com/mobile/110359-verizons-play-for-spectrum-and-why-you-should-be-worried>.

⁵⁰ See, e.g., *Palmer v. BRG of Ga., Inc.*, 498 U.S. 46, 49-50 (1990) (per curiam); *United States v. Topco Assocs.*, 405 U.S. 596, 608 (1972).

⁵¹ See Section V, below.

in mobile services. Extending the competitive analysis beyond the limited suggestion in Applicants' public interest statement, it is clear that the Transactions would substantially lessen competition in violation of the Clayton Act. And, as a violation of the Clayton Act is not in the public interest, the Commission should not allow the Transactions to proceed.

IV. THE SPECTRUM SCREEN SHOULD BE ADJUSTED TO REFLECT CURRENT AND NEAR-TERM CONDITIONS

For the reasons discussed in Section III, the Commission should not rely solely on a spectrum screen to determine which markets require review for potential anti-competitive effects. To the extent that the Commission does use a screen, however, it must update its methodology to be more effective in identifying markets in which "no potential" for such effects exists, since the current approach disregards economic reality.⁵² Therefore, if the Commission is to use a screen at all, it should re-examine its approach and modify the screen parameters to be more useful.

In analyzing mobile spectrum concentration, the Commission includes only those spectrum bands that are both "suitable" and "available" for mobile telephony/broadband service uses in the "near-term." Suitability is based on "[i] whether the spectrum is capable of supporting mobile services given its physical properties and state of equipment technology, [ii] whether the spectrum is licensed with a mobile allocation and corresponding service rules, and [iii] whether the spectrum is committed to another use that effectively precludes its use for the relevant mobile service."⁵³

Spectrum that is suitable must also be available for use in the near term. The Commission, consistent with the revised merger guidelines, has modified its spectrum screen analysis to

⁵² Chevalier Decl. at para. 24; Declaration of Peter Cramton at paras. 11-14 (attached hereto as Exhibit C) ("Cramton Decl.").

⁵³ *AT&T-Qualcomm Order* at para. 38.

“consider the spectrum to be a relevant input if it will meet the criteria for suitable spectrum in the near term”⁵⁴ based upon the revised 2010 DOJ-FTC guidelines.⁵⁵

The Commission adopted a screen in 2001 with the express recognition that its analysis of particular transactions needs to reflect market conditions as they may change over time.⁵⁶ As the Commission envisioned, the market has changed considerably since the screen was first applied in 2004, and in addition to adjusting the spectrum input market and the weighting of the various spectrum for purposes of the Commission’s spectrum concentration analysis as discussed above, the Commission should also evaluate whether to include in the screen analysis only spectrum that is suitable and available in the near-term for both mobile telephony *and* mobile broadband services. The Commission has adopted a strong policy advocating for the expansion

⁵⁴ *Id.* at para. 38, n.117.

⁵⁵ U.S. Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines*, § 9.1 (2010), available at <http://www.justice.gov/atr/public/guidelines/hmg-2010.pdf> (“In order to deter the competitive effects of concern, entry must be rapid enough to make unprofitable overall the actions causing those effects.”). While Applicants suggest that the two-year time frame is still the applicable period for analysis, the Commission clarified that the new DOJ-FTC guidelines would apply to this type of review. *AT&T-Qualcomm Order* at para. 38, n.117.

⁵⁶ 2000 Biennial Regulatory Review, *Spectrum Aggregation Limits for Commercial Mobile Radio Services*, Report and Order, 16 FCC Rcd 226688, at para. 50 (2001). The current “spectrum screen” approach dates from 2004, when the Commission used it to focus its analysis of the proposed AT&T/Cingular combination only on markets “in which the level of spectrum aggregation [as a result of the combination] will exceed what is present in the marketplace today.” In that case, it set the screen level at 70 MHz. *Applications of AT&T Wireless Services, Inc. and Cingular Wireless Corporation*, WT Docket No. 04-70, Memorandum Opinion and Order, 19 FCC Rcd 21522, at para. 109 (2004) (“*AT&T Wireless-Cingular Order*”). In subsequent decisions, however, it applied different trigger levels (95 MHz and later 145 MHz) based on changes in the spectrum found to be available and suitable for mobile services. See *Fifteenth Annual Report* at para. 281. Thus, the spectrum screen has always been subject to review and adjustment on a case-by-case basis. Most recently, in *AT&T-Qualcomm*, the Commission stated clearly that it was not bound by past applications of the spectrum screen, but could consider a variety of factors as part of its “case-by-case analysis” of whether a transaction would have adverse competitive effects, and expanded its market analysis to assess the competitive impacts of the transaction in a national market. *AT&T-Qualcomm Order* at paras. 35, 50-51.

and adoption of broadband services throughout the country,⁵⁷ and in the arena of mobile services specifically, the Commission has found that “the provision of mobile broadband service is becoming increasingly critical to competition in the mobile marketplace.”⁵⁸ Due to the increasing prevalence and demand for mobile broadband services, and especially for 4G broadband, the Commission has announced it henceforth will use a “combined ‘mobile telephony/broadband services’ product market” in transaction reviews.⁵⁹ Accordingly, the Commission should consider whether the “availability” and “suitability” criteria should be applied only to spectrum that is available and suitable to serve that combined market, and perhaps other adjustments as appropriate to its forward-looking review of the competitive landscape.

A. The Screen Should Exclude Spectrum That is Not “Suitable” and “Available” in the “Near Term”

Consistent with the standard described above, in analyzing the Transactions, the Commission should exclude spectrum that it can not rationally conclude will likely be suitable and available for retail mobile voice and broadband in the near term. In particular, it should exclude the Upper 700 MHz D Block and the block of Specialized Mobile Radio (“SMR”) 800 MHz spectrum dedicated to public safety use. Further, the Commission should reject the Applicants’ request to modify the screen to include certain BRS, EBS, MSS/ATC, and WCS spectrum,⁶⁰ which are neither available nor suitable. Applicants also asked the Commission to consider the PCS G Block (10 MHz), and since that spectrum is now licensed and available for broadband

⁵⁷ *National Broadband Plan* at 9 (adopting goals for providing affordable access to at least 100 million U.S. households and “lead[ing] the world in mobile innovation, with the fastest and most extensive wireless network of any nation”).

⁵⁸ *AT&T-Qualcomm Order* at para. 32.

⁵⁹ *Id.* at para. 33.

⁶⁰ *SpectrumCo Public Interest Statement* at 29-33.

use, T-Mobile does not oppose that request.⁶¹ Incorporating existing market realities into the application of the screening process more realistically calibrates the substantial threat to competition posed by the Transactions.

1. The Commission should exclude the Upper 700 MHz D Block and the SMR 800 MHz spectrum reserved for public safety use

In past decisions, the D Block of the Upper 700 MHz band has been included in the spectrum screen. Last week, however, Congress enacted legislation requiring the Commission to reallocate this block to public safety use.⁶² The 10 MHz D Block is no longer “available” for mobile services, so the 700 MHz spectrum included in the screen calculation should be reduced from 80 to 70 MHz.

Certain SMR spectrum in the 800 and 900 MHz bands is not suitable for commercial mobile services and its inclusion in the screen is therefore unwarranted.⁶³ In the *800 MHz Order*, the Commission determined that there was a serious interference problem in the 800 MHz band caused “by a fundamentally incompatible mix of two types of communications systems:” cellular-architecture multi-cell systems—used by CMRS providers and “noncellular systems—used by public safety” systems.⁶⁴ As a result, it reconfigured the 800 MHz band, separating 14 MHz for use by CMRS in the upper bands (817-824 MHz/862-869 MHz) and 18 MHz (806-815 MHz/851-860 MHz) reserved for public safety, critical infrastructure (CII) and other non-cellular

⁶¹ T-Mobile includes this 10 MHz block in its spectrum screen proposal in section IV.A.3, below.

⁶² H.R. 3630, Middle Class Tax Relief and Job Creation Act of 2012, Sec. 6101 (Feb. 17, 2012).

⁶³ See *Improving Public Safety Communications in the 800 MHz Band*, Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, 19 FCC Rcd 14969 (2004), as amended by Erratum, 19 FCC Rcd 19651 (2004) and Erratum, DA 04-3459 (2004) (“*800 MHz Order*”).

⁶⁴ *800 MHz Order* at para. 2.

systems.⁶⁵ Thus only 14 MHz of this SMR spectrum is suitable and available for commercial broadband service.⁶⁶

The Commission should confirm that the 800 MHz spectrum reserved for public safety use as that spectrum is neither suitable nor available for commercial use to provide cellular mobile voice or broadband, and should reduce the amount of SMR spectrum in the screen from 26.5 MHz to 14 MHz.

2. The Commission should reject the Applicants' request to consider additional spectrum

The Applicants ask the Commission to include in its concentration analysis spectrum that they contend “potentially can be used to provide wireless services.”⁶⁷ The Commission should reject this request. As discussed at page 19 above, the analysis looks to “near term” availability (not merely “potential” availability), and considers the suitability of the spectrum for mobile broadband in addition to mobile voice. Under these criteria, none of the spectrum referenced in the Applicants' request can be added to the screen.

a. BRS/EBS

To date, the Commission has included 55.5 MHz of the BRS spectrum in the screen, but repeatedly has rejected arguments to include additional BRS spectrum due to significant technical barriers that limit the usefulness of these bands for mobile telephony/broadband services.⁶⁸ While the Applicants acknowledge these previous decisions,⁶⁹ they urge a reversal of this policy but have not demonstrated that there are any new technical developments that allow for use of

⁶⁵ *Id.* at para. 11.

⁶⁶ See *AT&T-Qualcomm Order* at para. 14, n.126 (stating that “when conducting competitive analysis in the future, the Commission may decide to include only the 14 megahertz of SMR spectrum suitable and available for mobile broadband services[.]”).

⁶⁷ *SpectrumCo Public Interest Statement* at 29.

⁶⁸ *Verizon Wireless-ALLTEL Order* at para. 65; *Sprint Nextel-Clearwire Order* at para. 70.

⁶⁹ *SpectrumCo Public Interest Statement* at 30.

this spectrum for mobile broadband. The Commission should continue to exclude this spectrum from its screen.

The Commission has also found the EBS bands unsuitable and unavailable for commercial mobile telephony/broadband services.⁷⁰ Just two years ago, Verizon Wireless agreed with that Commission conclusion.⁷¹

Applicants argue that these spectrum bands are now available because Clearwire is providing service using some of the 2.5 GHz spectrum.⁷² There are several glaring flaws in this argument. First, none of the evidence cited by Applicants establishes that Clearwire's use of BRS exceeds the 55.5 MHz of BRS spectrum already in the screen.⁷³ Second, Clearwire started using BRS and EBS to develop mobile services in 2008,⁷⁴ but the Commission afterwards refused to change its treatment of these bands in the screen, including as part of its review of the merger of

⁷⁰ The "primary purpose of EBS is to further the educational mission of accredited public and private schools, colleges and universities" and limitations are placed on any leasing of this spectrum to ensure that it "maintain[s] the primary educational character of services provided using EBS. ... In addition, other elements of the EBS licensing regime, such as its solely site-specific character, ... complicate use of this spectrum for commercial purposes." *Sprint Nextel-Clearwire Order* at para. 71. *See also Application of AT&T Inc. and Dobson Communications Corp. for Consent to Transfer Control of Licenses and Authorizations*, Memorandum Opinion and Order, 22 FCC Rcd 20295, at para. 34 (2007); *Verizon Wireless-ALLTEL Order* at para. 67; *Fifteenth Annual Report* at n.815 ("EBS spectrum, which is licensed to educational institutions and can be leased to commercial operators, is not included in the Commission's spectrum screen when evaluating proposed transactions.").

⁷¹ "While the EBS band may certainly be used to *support* broadband services, including through spectrum leases to commercial providers, licensing in the band is restricted to educational entities, and thus, does not meet the requirement for exclusively licensed, flexible use spectrum that Verizon Wireless believes is critical to support commercial mobile broadband services." Comments of Verizon Wireless on Spectrum for Broadband, NBP Public Notice #6, National Broadband Plan, GN Docket No. 09-47, at 13, n.26 (filed Oct. 23, 2009) (emphasis supplied).

⁷² *SpectrumCo Public Interest Statement* at 30.

⁷³ *See Sprint Nextel-Clearwire Order* at para. 70; *Verizon Wireless-ALLTEL Order* at para. 65.

⁷⁴ *Fifteenth Annual Report* at para. 273.

Clearwire and Sprint-Nextel.⁷⁵ Third, while the Applicants suggest that the Commission has acknowledged Clearwire as a viable competitor, the *Fifteenth Annual Report* actually states that Clearwire is one of several providers that “*could* introduce new competitive constraints at the regional or national level.”⁷⁶ Further, the *Fifteenth Annual Report*’s discussion of EBS was expressly qualified by referencing the past decisions finding this band is not suitable or available for mobile voice and broadband.⁷⁷ In sum, Applicants’ arguments about these bands are not different in any material respect from those the Commission has rejected in the past.

b. MSS/ATC

The Applicants claim that the Commission has already found that MSS/ATC spectrum has the potential to enhance competition for terrestrial mobile wireless services.⁷⁸ In order to fashion this argument the Applicants rely on snippets of Commission statements and ignore the broader context of those statements that lay out the severe problems with the use of MSS/ATC spectrum for mobile terrestrial wireless services. When analyzed carefully and in context, it is clear that MSS/ATC spectrum does not satisfy the Commission’s criteria for inclusion in the screen. Rather, the availability of the MSS/ATC spectrum for wireless broadband is speculative at best, and even if it were to become available, it would not be in the “near-term.” Its inclusion in the screen remains unwarranted.

⁷⁵ See generally *Sprint-Clearwire Order*. The Commission specifically acknowledged that Clearwire was providing service using leased EBS spectrum, but nonetheless refused to consider this spectrum in the screen. *Id.* at paras. 7, 71.

⁷⁶ *Fifteenth Annual Report* at para. 67 (italics added). Interestingly, the Applicants fail to note that the *Fifteenth Annual Report* also identified Cox Communications as a potential new competitor, although this potential competition would be eliminated by the Transactions. *Id.* at para. 72.

⁷⁷ *Fifteenth Annual Report* at para. 281, n.815.

⁷⁸ *SpectrumCo Public Interest Statement* at 31.

As the Commission is well aware, the only *currently authorized* terrestrial use of MSS spectrum is for operations ancillary to the space segment.⁷⁹ LightSquared, an MSS licensee, had obtained a contingent waiver that could have allowed it to provide terrestrial wireless services not required to be integrated with its MSS service.⁸⁰ The International Bureau currently is taking steps to vacate that waiver, however, due to substantial interference concerns raised by the government and the commercial GPS industry, and is also considering revocation of LightSquared's existing ancillary terrestrial authority.⁸¹

In addition, satellite television operator DISH Network is seeking Commission approval of its proposed acquisition of MSS/ATC licensees and spectrum, and a contemporaneous request for a waiver of the rules so that it could provide "terrestrial-only" service.⁸² The waiver request, in particular, has proven controversial, and approval does not appear imminent. Potential obsta-

⁷⁹ See generally, e.g., *Establishing Rules and Policies for Use of Spectrum for Mobile Satellite Services in Upper and Lower L-Band*, Report and Order, 17 FCC Rcd 2704, at paras. 11-20 (2002); *Flexibility for Delivery of Communications by Mobile Satellite Service Providers in 2 GHz Band, The L-band, and the 1.6/2.4 GHz Band, 01-185*, Report and Order and Notice of Proposed Rulemaking, 18 FCC Rcd 1962, 1975, at para. 23 (2003) ("*MSS/ATC Order*") (record demonstrated that use of ATC would allow MSS licensees to "fill[] gaps in the MSS coverage area" and "permit customers in underserved or unserved terrestrial markets to use ATC-enabled MSS handsets when in urban areas or inside buildings.").

⁸⁰ *LightSquared Subsidiary LLC, Request for Modification of its Authority for an Ancillary Terrestrial Component*, Order and Authorization, 26 FCC Rcd 566 (IB 2011) ("*LightSquared Order*").

⁸¹ *International Bureau Invites Comment on NTIA Letter Regarding LightSquared Conditional Waiver*, Public Notice, IB Docket No. 11-109, DA 12-214 (rel. Feb. 14, 2012); Statement from FCC Spokesperson Tammy Sun on Letter from NTIA Addressing Harmful Interference Testing Conclusions Pertaining To LightSquared and Global Positioning Systems (rel. Feb. 14, 2012).

⁸² See *DISH Network Corporation Files to Acquire Control of Licenses and Authorizations Held By New DBSD Satellite Services G.P., Debtor-in-Possession and TerreStar License Inc., Debtor-in-Possession*, Public Notice, 26 FCC Rcd 13018 (2011); *New DBSD Satellite Service G.P., Debtor-in-Possession, and TerreStar Licensee Inc., Debtor-In-Possession, Request For Rule Waivers And Modified Ancillary Terrestrial Component Authority*, Public Notice, 26 FCC Rcd 13011, at 1 (2011) ("*DBSD-TerreStar Public Notice*").

cles that might impact terrestrial use of the S-band have not been fully addressed. For example, it remains unclear whether the proposed network will create interference concerns for adjacent spectrum users, including government earth stations. DISH Network may also opt to continue providing mobile satellite services using S-band spectrum and delay or altogether avoid the development of a terrestrial network if it deems conditions imposed by the Commission in any forthcoming order as unfavorable or onerous. There is currently no obligation to provide terrestrial services using S-band spectrum, and the underlying S-band mobile satellite licenses that DISH Network seeks to acquire are perfected and do not expire until 2024 and 2025, respectively.

Thus, in both instances where the Commission is considering the use of MSS/ATC spectrum for terrestrial mobile services, there is no basis to conclude that such services will be available in the near term. Unless and until the Commission's concerns are resolved, MSS spectrum is limited to serving as a "component of an integrated service offering including Mobile-Satellite Service (MSS)," ⁸³ and therefore is "committed to another use that effectively precludes its uses for the relevant mobile service." ⁸⁴

c. WCS

WCS operates adjacent to the Satellite Digital Audio Radio Service ("SDARS") and technical limitations to avoid interference prevented use of this spectrum for mobile services. In May 2010, the Commission revised the rules to protect SDARS but allow mobile operations. ⁸⁵ AT&T has shown that under the new technical rules the spectrum could not be used for mobile broadband because

⁸³ *DBSD-Terrestar Public Notice* at 1.

⁸⁴ *AT&T-Qualcomm Order* at para. 38.

⁸⁵ *Fifteenth Annual Report* at para. 25.

the power spectral density limit included in the rules will increase the cost of network deployment markedly by requiring a substantial increase in the number of cell sites. At the same time, it will reduce the quality, throughput, and efficiency of mobile wireless WCS networks. In addition, the mobile and portable device duty-cycle limits will substantially limit uplink throughput, constrain video applications, interactive gaming, and other uplink-intensive services.... Furthermore, the severe restrictions on C and D Block licenses make them all but useless for any significant broadband service.⁸⁶

Applicants claim that the *Fifteenth Annual Report* found that “WCS spectrum is suitable to provide, and has the potential to compete with, mobile services.”⁸⁷ But the *Fifteenth Annual Report* does not address the concerns raised by AT&T and other WCS interests in their petitions for reconsideration.⁸⁸ Applicants have not provided any technical or other rationale negating the industry’s concerns that WCS is not suitable for mobile telephony/broadband use.

3. Summary of proposed adjustments to screen

Based on the preceding sections, T-Mobile suggests that the spectrum considered available and suitable for mobile telephony and broadband services be adjusted as shown in Table 2 below:

⁸⁶ See *Amendment of Part 27 of the Commission’s Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band*, AT&T Petition for Partial Reconsideration, WT Docket No. 07-293, at 13-14 (filed Sept. 1, 2010) (“*AT&T Petition on Part 27*”); see also *Applications of AT&T Inc. and Deutsche Telekom AG for Consent To Assign or Transfer Control of Licenses and Authorizations*, Description of Transaction, File No. 0004669383, Description of Transaction, Public Interest Showing, and Related Demonstrations at 49, n.48 (filed April 21, 2011).

⁸⁷ *SpectrumCo Public Interest Statement* at 32 (citing *Fifteenth Annual Report* at para. 276 (stating that the revised rules “will enable WCS licensees to offer mobile broadband services”)).

⁸⁸ See *Amendment of Part 27 of the Commission’s Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band*, WT Docket No. 07-293, AT&T Petition for Partial Reconsideration (filed Sept. 1, 2010); Petition of the WCS Coalition for Partial Reconsideration (filed Sept. 1, 2010); Petition For Reconsideration of Green Flag Wireless, LLC, CWC License Holding, Inc., and James McCotter (filed Sept. 1, 2010).

Table 2

Band	MHz (previous)	MHz (proposed)
Cellular	50	50
700 MHz	80	70
SMR	26.5	14
PCS	120	130
AWS-1	90	90
BRS	55.5	55.5
Total	422	409.5

Accordingly, if no other changes were made, the current spectrum screen threshold of 145 MHz would have to be adjusted downward by approximately 4-5 MHz to reflect the smaller base. For the reasons discussed in the following section, however, that would not be sufficient to cure the deficiencies of the screen analysis.

B. The Commission Should Weight Spectrum Based on Market Values

The Commission historically has treated all spectrum the same when determining whether a market should be subjected to additional competitive scrutiny. Recently, however, the Commission acknowledged that this does not reflect technical and market realities. T-Mobile agrees and urges that the Commission adopt a spectrum screen that weights spectrum based on estimated market values.

Not all spectrum is equal when it comes to propagation characteristics and building penetration.⁸⁹ The Commission has found it “well established that lower frequency bands – such as the 700 MHz and Cellular bands – possess more favorable intrinsic spectrum propagation characteristics than spectrum in higher bands.”⁹⁰ As a result, “‘low-band’ spectrum can provide superior coverage over larger geographic areas, through adverse climates and terrain, and inside

⁸⁹ Cramton Decl. at para. 16 .

⁹⁰ *Fifteenth Annual Report* at para. 292.

buildings and vehicles.”⁹¹ Likewise, DOJ has stated that “because of the characteristics of PCS spectrum, providers holding this type of spectrum generally have found it less attractive to build out in rural areas.”⁹²

The different physical characteristics of spectrum have direct economic impacts. “[L]ow-band spectrum can provide the same geographic coverage, at a lower cost, than higher-frequency bands, such as the 1.9 GHz PCS band, the 1.7/2.1 GHz AWS band, and the 2.5 GHz band.”⁹³ Thus, a “licensee that exclusively or primarily holds spectrum in a higher frequency range generally must construct more cell sites (at additional cost) than a licensee with primary holdings at a lower frequency in order to provide *equivalent* service coverage, particularly in rural areas.”⁹⁴

These substantial differences in the cost and burden of utilizing spectrum are reflected in spectrum valuations, both here and in other countries. For example, in the 2008 auction of 700 MHz spectrum, the average price was \$1.28 per MHz-pop – more than twice the average of \$0.54 per MHz-pop for AWS spectrum auctioned in 2006.⁹⁵ In 2010 auctions in Germany and

⁹¹ *Id.* at para. 292 (“The Commission has also noted, in particular with respect to 700 MHz band spectrum, that lower frequency spectrum has ‘excellent propagation’ characteristics that, in contrast to higher frequency bands such as PCS and AWS spectrum, ‘make it ideal for delivering advanced wireless services to rural areas.’”).

⁹² *U.S. v. Verizon and Alltel*, Competitive Impact Statement, Case No. 08-cv-1878, at 6 (D.D.C. Oct. 30, 2008).

⁹³ *Fifteenth Annual Report* at para. 293. This is not meant to imply that higher-frequency spectrum is without value, just that there are differences in value among different bands of spectrum. *Id.* at para. 296.

⁹⁴ *Id.* at para. 293 (emphasis added). The National Institute of Standards and Technology (NIST) developed a propagation model comparing the 700 MHz, 1.9 GHz, and 2.4 GHz spectrum bands and concluded that the favorable propagation characteristics meant that coverage using the same transmission power differed significantly, translating into the need for less infrastructure. NIST, *700 MHz Band Channel Propagation Model*, <http://www.nist.gov/itl/antd/emntg/700mhz.cfm> (visited Feb. 10, 2012).

⁹⁵ *Fifteenth Annual Report* at para. 295.

Italy, bidders valued 800 MHz spectrum at 15 to 30 times more than equally-sized lots of 2.6 GHz spectrum.⁹⁶ Similar disparities are reflected in secondary market valuations.⁹⁷

All this means that “[t]wo licensees may hold equal quantities of bandwidth but nevertheless hold very different spectrum assets.”⁹⁸ The logical consequence of this economic reality is that the spectrum screen should be based on weighted spectrum.

While this Commission previously has declined to “differentiate[] among [spectrum] bands based on specific propagation characteristics or purported distinctions in trading value,”⁹⁹ conditions have changed and so has its willingness to entertain such a nuanced analysis.¹⁰⁰ It has recognized the disparate value of spectrum by evaluating spectrum on either side of the 1 GHz divide. In both the Fifteenth Annual Report and in *AT&T-Qualcomm*, the Commission found it “prudent to inquire about the potential impact of [an acquirer’s] aggregation of spectrum below 1 GHz as part of the Commission’s case-by-case analysis.”¹⁰¹

The Commission established the screen to “ensure that we did not exclude from further scrutiny any geographic areas in which any potential for anti-competitive effects exist.”¹⁰² The

⁹⁶ Cramton Decl. at para. 18. Because of the recognized economic differences among bands, German regulators have placed restrictions on the amount of sub-1GHz spectrum (in the 800 MHz band) that any mobile service provider could obtain, depending on how much sub-1 GHz spectrum a particular mobile provider already held. *See* Decision of the President’s Chamber of the Federal Network Agency for Electricity, Gas, Telecommunications, Post, and Railway, Oct. 16, 2009, at 6, 9, *available at* http://www.bundesnetzagentur.de/cae/servlet/contentblob/138364/publicationFile/3682/DecisionPresidentChamberTenor_ID17495pdf.pdf. Many other national regulators have adopted band-specific spectrum competition policies. Cramton Decl. at para. 25.

⁹⁷ Cramton Decl. at para. 29.

⁹⁸ *Fifteenth Annual Report* at para. 290 (emphasis added).

⁹⁹ *Sprint-NextelClearwire Order* at para. 63.

¹⁰⁰ *See, e.g., AT&T-Qualcomm Order* at paras. 43-51.

¹⁰¹ *AT&T-Qualcomm Order* at para. 49; *see also Fifteenth Annual Report* at para. 307.

¹⁰² *AT&T Wireless-Cingular Order* at para. 112.

unweighted approach clearly does not achieve this goal – at the extreme, it would not find “any potential for anti-competitive effects” if a single carrier acquired *all* of the Cellular, SMR, and 700 MHz spectrum in a given market, as long as that carrier did not hold any higher-frequency spectrum.¹⁰³ Using a weighted spectrum approach based on actual economic value would refine the screen results and more accurately identify those markets to which the Commission should direct its attention.¹⁰⁴

To account for the unequal values of spectrum, the Commission could accord different weight to the frequency bands in the spectrum screen. It could rely on several analytical studies performed by the investment community to set the weight for the spectrum.¹⁰⁵ Based upon the analysis set forth in the accompanying Declaration of Peter Cramton (Exhibit C hereto), T-Mobile proposes that the Commission initially adopt the following relative weights, based on currently available estimates of market value:¹⁰⁶

¹⁰³ The total Cellular, SMR, and 700 MHz spectrum allocations total 134 MHz, below the level of 145 MHz at which the Commission has begun to consider potential competitive harm. Cramton Decl. at paras. 14 and 32.

¹⁰⁴ Cramton Decl. at paras. 26 and 37.

¹⁰⁵ See, e.g., Coleman Bazelon, *The Economic Basis of Spectrum Value: Pairing AWS-3 with the 1755 MHz Band Is More Valuable than Pairing It with Frequencies from the 1690 MHz Band*, The Brattle Group, Inc., at 9 (Apr. 11, 2011), available at http://www.brattle.com/_documents/UploadLibrary/Upload938.pdf; Philip Cusick, CFA, Richard Choe, & Derya Erdemli, CFA, *Telecom Services & Toward; Spectrum Valuation Overview – Carrier by Carrier Base-Case Spectrum Value Across Wireless Industry*, J.P. Morgan Securities LLC, North America Equity Research, at 5 (Nov. 30, 2011); Elizabeth Woyke, *Telecom Deals Ratchet Up Price Of Wireless Spectrum*, FORBES, Dec. 2, 2011, available at <http://www.forbes.com/sites/elizabethwoyke/2011/12/02/telecom-deals-ratchet-up-price-of-wireless-spectrum/>.

¹⁰⁶ Cramton Decl. at para. 31. The specific value weights would have to be adjusted from time to time based on current market conditions.

Table 3

Band	Value weight
Cellular	1.7
700 MHz	1.5
SMR	1.5
AWS/PCS	.75
BRS	.20

Applying a screen based on value-weighted spectrum holdings shows that the proposed Transactions would result in Verizon Wireless holding one-third or more of the spectrum by value in 12 of the top 25 CMAs.¹⁰⁷ The benefits of capturing the economic impact of spectrum concentration much more accurately with this approach should justify the slight additional complexity of the review.

V. THE POTENTIAL HARMS CLEARLY OUTWEIGH APPLICANTS' CLAIMED BENEFITS

In an effort to meet their burden of proving that the Transactions would promote the public interest, Applicants describe at length the public demand for mobile services, and the need for spectrum to satisfy that demand, along with the public interest in encouraging economically efficient use of spectrum.¹⁰⁸ Applicants have answered the wrong question. In this proceeding, the Commission will not have to decide in the abstract whether there is *some* potential public benefit to deploying spectrum to satisfy the growing public demand for mobile service, and especially for mobile broadband – no one doubts that deploying more spectrum in theory could produce *some* benefit. Rather, Applicants must demonstrate that the incremental benefits of these *specific* proposed Transactions are sufficient to outweigh the substantial public interest harm of increasing the dominant spectrum position of Verizon Wireless and foreclosing expansion by smaller competitors. They have not even purported to do that.

¹⁰⁷ Cramton Decl. at para. 36, Fig. 6.

¹⁰⁸ *SpectrumCo Public Interest Statement* at 5-19.

In fact, because Verizon Wireless has substantial spectrum holdings that are not currently being fully utilized and will not be fully utilized in the near future,¹⁰⁹ it is doubtful that even the very generalized public interest benefits touted by Applicants will actually be realized. Verizon Wireless concedes that it does not need and will not likely use this spectrum in the near term.¹¹⁰ Yet Applicants also acknowledge the Commission's forecast that if additional spectrum is not made available in the near term, mobile data demand will likely exceed capacity in the industry as a whole by 2014.¹¹¹ T-Mobile will certainly put this spectrum to use much sooner compete with Verizon Wireless, and it is very likely that other prospective purchasers would do the same. In short, since Verizon Wireless has no need for this spectrum in the near term, the most immediate effect of the Transactions will be to foreclose competitors from obtaining a necessary input to enable their continued competitiveness. It thus will deprive consumers of the best utility of the spectrum (and the related benefits of robust competition), as well as forcing Verizon Wireless' competitors to bear the full brunt of the impending capacity constraint. Clearly, this result would contravene the public interest.

That Verizon Wireless may make use of this spectrum at some point in the future is no justification for an acquisition that potentially has the more immediate effect of depriving rivals of this scarce and essential resource, thereby hindering them from continuing to evolve competitively and denying the public the benefits of greater competition in services, pricing and innovation. As detailed in the attached declaration of Neville R. Ray, T-Mobile's Chief Technology Officer, Verizon Wireless already has unused spectrum in the AWS band and underused spectrum in the 700 MHz band, a luxury not shared by smaller competitors like T-Mobile. Carriers like T-Mobile, which face significantly more stringent constraints than Verizon Wireless, cannot

¹⁰⁹ Chevalier Decl. at para. 35.

¹¹⁰ *SpectrumCo Public Interest Statement* at 13.

¹¹¹ *Id.* at 9.

afford to let spectrum sit idle until some future time. Accordingly, T-Mobile has developed techniques for maximizing the efficient use of *all* of its spectrum. This process is complex and resource-intensive, but frees up portions of the existing spectrum for new services, including 4G broadband.¹¹² By contrast, Verizon Wireless has little incentive to engage in these efficiency-enhancing techniques due to its abundant spectrum holdings. Restoring the availability of this spectrum for others rather than placing it all in Verizon Wireless' hands would result in more robust competition and better service and devices for consumers through all providers.

Applicants also claim that the "cost of not securing enough spectrum may be higher prices, poorer service, lost productivity, loss of competitive advantage and untapped innovation."¹¹³ However, by foreclosing more constrained rivals of Verizon Wireless from obtaining needed spectrum, these Transactions will create the very scenario Applicants warn against. By simultaneously weakening these competitors and adding to Verizon Wireless' surplus of warehoused spectrum, Verizon Wireless' incentive to innovate more spectrally efficient technologies will be doubly reduced and its competitors' ability to compete robustly in the provisions of new products and services for consumers will be undercut.

In sum, allowing Verizon Wireless to add more spectrum to its warehouse will not produce any immediate public benefits, and actually would result in less efficient use overall of this scarce resource. Even if there were some modest eventual benefit, it would not be sufficient to overcome the very high probability of significant competitive harm resulting from the Transactions.

¹¹² Ray Decl. at 4.

¹¹³ *SpectrumCo Public Interest Statement* at 6-7 (quoting *National Broadband Plan* at 85).

VI. CONCLUSION

For the foregoing reasons, the Commission should deny the Applications.

Respectfully submitted,

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Dated: February 21, 2012

REDACTED - FOR PUBLIC INSPECTION

EXHIBIT A

Declaration of Judith Chevalier

**DECLARATION
OF
PROFESSOR JUDITH CHEVALIER**

February 21, 2012

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I. INTRODUCTION

A. Assignment

1. I, Judith Chevalier, submit this declaration on behalf of T-Mobile USA, Inc. (“T-Mobile”) in Docket WT 12-4. I have been retained to provide expert analysis and testimony, if necessary, regarding two related transactions involving transfers of spectrum between SpectrumCo, LLC (“SpectrumCo”), Cox TMI Wireless, LLC (“Cox”) and Cellco Partnership d/b/a Verizon Wireless (“Verizon”). Specifically, I have been asked to examine the effects of the proposed transaction on consumers of wireless services.
2. I am the William S. Beinecke Professor of Economics and Finance at the Yale School of Management. My research is in the areas of industrial organization and corporate finance. At Yale, I teach or have taught courses in Competition, Competitive Strategy, Technology Strategy, and the Economics of the Information Economy. I am a co-editor of the Rand Journal of Economics, and a former co-editor of the American Economic Review. I am a former member of the executive committee of the American Economic Association and an elected member of the American Academy of Arts and Sciences. I have given invited presentations at many institutions including the Department of Justice, the Federal Trade Commission, and the Federal Communications Commission.
3. My CV is attached as Appendix A.

II. SUMMARY OF CONCLUSIONS

4. The summary of my conclusions is as follows:
 - a. It is a long-standing goal of the Federal Communications Commission (“FCC” or “Commission”), in its review of mergers and other spectrum transactions in the wireless industry, to discourage anticompetitive conduct and ensure that incentives are maintained for innovation and efficiency in the mobile services marketplace. Additionally, the FCC has been most concerned about spectrum that is available in the near term and suitable for mobile voice or broadband services.

- b. Some important economic factors in the spectrum market are difficult to analyze solely through the formulaic application of a “spectrum screen.” The FCC has made clear that these important economic factors must be measured and considered on a case-by-case basis.
- c. A dominant firm can face economic incentives to acquire and hoard a scarce asset, in order to disadvantage rival firms. An examination of the welfare effects of any spectrum transaction should consider whether the acquiror faces incentives to hoard spectrum.
- d. Not all spectrum is created equal. Spectrum in different bands is of different quality. Thus, in evaluating a transaction, the FCC must consider the type of spectrum involved. A straightforward evaluation using the current spectrum screen would suggest that holders of primarily high-quality spectrum have less market power than they actually have. Furthermore, the pattern of competitors’ existing infrastructure as it relates to the particular spectrum bands affects the competitive impact of a spectrum transaction.
- e. The spectrum transfer under consideration in this case poses concerns because of Verizon’s substantial existing holdings of high-quality spectrum and the incentives it would face to hoard the spectrum newly acquired from SpectrumCo and Cox.
- f. Verizon has clearly stated that its current spectrum holdings are sufficient for its business plan; the company has substantial spectrum holdings that are not currently being fully utilized and will not be fully utilized in the near future.
- g. The transaction between SpectrumCo, Cox and Verizon, if consummated, would eliminate the potential opportunity for other market participants, including T-Mobile, to acquire valuable spectrum.

III. BACKGROUND

A. Wireless Industry Background

- 5. The wireless industry consists of a variety of carrier types that provide customers with wireless services. The four largest wireless carriers, on a subscriber basis, operate

nationwide networks that cover approximately 87.5 percent of the U.S. population.¹ In addition to national carriers, the wireless industry consists of a large number of regional and rural carriers, as well as mobile virtual network operators and wholesalers.² Exhibit 1 presents the average spectrum holdings and shares of the six largest wireless carriers in the 50 largest U.S. markets.

6. Verizon, a joint venture of Verizon Communications and Vodafone, is the largest wireless communications company on a subscriber basis. Verizon Communications is the majority owner (55 percent) in Verizon Wireless and retains management control of the joint venture.³ Verizon provides wireless voice and data services across the U.S. to business, consumer, wholesale, and government customers.⁴ Additionally, Verizon offers equipment, consisting of wireless handsets and accessories, through their on-line and retail stores and third-party retailers.⁵ During the first three quarters of 2011, Verizon's domestic wireless operations generated \$51.9 billion in operating revenues and \$14.2 billion in operating income serving more than 107 million U.S. wireless connections.⁶

B. Proposed Spectrum Sale and Joint Marketing Agreements

7. This Docket addresses two related transactions. The first is between Verizon and SpectrumCo; the second is between Verizon and Cox.
8. On December 16, 2011, Verizon and SpectrumCo applied for a transfer of spectrum from SpectrumCo to Verizon. SpectrumCo is a firm jointly owned by three cable companies: Comcast, Time Warner Cable, and Bright House Networks.⁷ The spectrum in this transaction consists of 122 licenses in the Advanced Wireless Services ("AWS") band

¹ 15th Annual Competitiveness Report, FCC, June 27, 2011, pp. 31, 34.

² 15th Annual Competitiveness Report, FCC, June 27, 2011, pp. 31-32, 35-36.

³ Verizon Wireless, Company Website, About Us Facts-at-a-Glance Section, <<http://aboutus.verizonwireless.com/atagance.html>> (Accessed February 16, 2012); Verizon Communications, Company Website, Investor Relations – Corporate History Section, <<http://www22.verizon.com/investor/corporatehistory.htm>>, (Accessed February 17, 2012); Associated Press, "T-Mobile loses subscribers, beat by Verizon, AT&T," May 6, 2011, <<http://www.craigslist.com/article/20110506/FREE/110509907>>, (Accessed on February 19, 2012).

⁴ Verizon Wireless, Company Website, About Us Facts-at-a-Glance Section, <<http://aboutus.verizonwireless.com/atagance.html>> (Accessed February 16, 2012); Verizon Communications, Annual Report 2010, p. 46.

⁵ Verizon Communications, Annual Report (Form 10-K), for the fiscal year ended December 31, 2010, pp. 13, 14, 155.

⁶ Verizon Communications, Quarterly Report (Form 10-Q) for the period ending September 30, 2011, pp. 18, 29.

⁷ WT Docket 12-4, Verizon Wireless-SpectrumCo Application, FCC Form 603, Exhibit 1, p. 2.

covering 120 markets.⁸ In addition to the transfer of spectrum from SpectrumCo to Verizon, there are related agreements between Verizon and the cable companies addressing joint R&D and the marketing and resale of wireline and wireless services.⁹

9. On December 21, 2011, Verizon and Cox applied for a transfer of spectrum from Cox to Verizon. The spectrum in the transaction consists of 30 AWS licenses in 29 markets with 20 MHz of spectrum in each market.¹⁰ Cox is also a party to related agreements similar to those identified in the previous paragraph.¹¹

C. Cable Providers in This Transaction

10. SpectrumCo was founded in 2006, when a number of cable companies and Sprint teamed up to bid in the 2006 auction for wireless spectrum in the AWS band. SpectrumCo won 137 licenses, 20 MHz of nearly nationwide spectrum. SpectrumCo paid \$2.37 billion for these licenses. Comcast contributed \$1.29 billion, TWC contributed \$632 million, and Cox contributed \$248 million.¹²
11. Sprint left SpectrumCo in 2007. A year later Cox pulled some spectrum out of the joint venture to create its own wireless network. Cox announced recently that it will shut down its wireless network on March 30, 2012.¹³ The remaining spectrum held by SpectrumCo covers more than 80 percent of the continental United States and Hawaii.¹⁴ Currently, ownership shares of SpectrumCo are: Comcast – 64 percent, Time Warner Cable – 31 percent, and Bright House Networks – 5 percent.¹⁵
12. Cox TMI Wireless, LLC is a subsidiary of Cox Communications, which is in turn a subsidiary of Cox Enterprises, a digital cable television, telecommunications and wireless

⁸ All but one of the licenses have 20 MHz of spectrum, the exception is the license in Houston which has 30 MHz of spectrum. WT Docket 12-4, Verizon Wireless-SpectrumCo Application, FCC Form 603, Exhibit 1, p. 1.

⁹ WT Docket 12-4, Verizon Wireless-SpectrumCo Application, FCC Form 603, Exhibit 1, pp. 23-24.

¹⁰ WT Docket 12-4, Verizon Wireless-Cox Application, FCC Form 603, Exhibit 1, p. 1.

¹¹ WT Docket 12-4, Verizon Wireless-Cox Application, FCC Form 603, Exhibit 1, p. 20.

¹² J.P. Morgan, "Impact of Verizon Buying SpectrumCo – 20 MHz of AWS Spectrum Across ~260m pops," December 2, 2011, p. 2.

¹³ J.P. Morgan, "Impact of Verizon Buying SpectrumCo – 20 MHz of AWS Spectrum Across ~260m pops," December 2, 2011, p. 2; Cox Communications, Company Website, Customer Support Section, <<http://ww2.cox.com/residential/omaha/support/wireless-message.cox>>, (Accessed February 19, 2012).

¹⁴ J.P. Morgan, "Impact of Verizon Buying SpectrumCo – 20 MHz of AWS Spectrum Across ~260m pops," December 2, 2011, p. 2.

¹⁵ J.P. Morgan, "Impact of Verizon Buying SpectrumCo – 20 MHz of AWS Spectrum Across ~260m pops," December 2, 2011, p. 2.

service provider in the United States. Cox Communications continues to provide high speed internet, digital telephone services and digital cable services for homes and businesses.¹⁶

IV. FCC REVIEW PROCEDURES FOR WIRELESS LICENSE TRANSFER REQUESTS

13. The FCC has adopted an increasingly flexible policy approach through the years with regard to the allocation of electromagnetic spectrum to mobile voice and data services, the assignment of use permits (licenses) for the spectrum, and approval of license transfers following the initial assignment. In 1982, when first licensing 50 MHz of Cellular spectrum, the FCC required that two different licensees serve each wireless market in order to promote competition between mobile telephony providers.¹⁷ In 1994, in advance of the PCS auctions, the FCC adopted a spectrum cap, under which no entity could control more than 45 MHz out of 180 MHz of Cellular, SMR, and broadband PCS spectrum in any given wireless market.¹⁸

14. In 2003, in the interest of increasing regulatory flexibility, the FCC eliminated the “inflexible” spectrum cap. The Commission concluded that a “case-by-case approach [to the review of spectrum transactions] is more flexible and reduces the possibility of blocking transactions that are actually in the public interest or, alternatively, permitting transactions that are not in the public interest.”¹⁹ One tool the Commission has adopted under this more flexible approach to merger and license transfer review is a spectrum screen “to assist in [the] analysis of potential competitive concerns raised by transactions in which providers were aggregating spectrum.”²⁰ Initially, only Cellular, SMR, and PCS

¹⁶ CDMA Development Group, Company Website, About the CDG, CDG Members Section, <<http://dev.cdg.org/about/members/cox.asp>>, (Accessed on February 17, 2012); Cox Communications, Company Website, Our Story Section, <<http://www2.cox.com/aboutus/our-story.cox>>, (Accessed on February 19, 2012); Our Story-Our Services Section, <<http://www2.cox.com/aboutus/our-story/our-services.cox>> (Accessed on February 19, 2012); Customer Support Section, <<http://www2.cox.com/residential/omaha/support/wireless-message.cox>>, (Accessed February 19, 2012).

¹⁷ 15th Annual Competitiveness Report, FCC, June 27, 2011, p. 160, para 270.

¹⁸ 15th Annual Competitiveness Report, FCC, June 27, 2011, pp. 163-164, para 280.

¹⁹ WT Docket 01-14, *2000 Biennial Regulatory Review*, FCC, December 18, 2001, p. 26, para 48; 15th Annual Competitiveness Report, FCC, June 27, 2011, pp. 163-164, para 280.

²⁰ 15th Annual Competitiveness Report, FCC, June 27, 2011, p. 164, para 281.

spectrum were considered in the spectrum screen analysis. Furthermore, only the mobile telephony sector was considered in the market definition. As 700 MHz, AWS, and BRS spectrum became available, new spectrum bands were included in the spectrum screen analysis.²¹ In 2008, recognizing that the mobile services marketplace had evolved, the FCC revised its spectrum screen tool to examine both mobile telephony and mobile broadband services.²² The Commission has used this tool, along with others, to assist it in identifying markets where further analysis of the competitive effects of a transaction are necessary. Depending on the outcome of additional analysis, the FCC has required spectrum divestiture in certain markets.²³

15. The FCC has emphasized the need for regulatory flexibility,²⁴ and the agency's move towards a flexible approach in its review of spectrum transactions mirrors recent changes in competition guidelines from other agencies for the review of mergers and other transactions. For example, in a press release accompanying the 2010 release of the revised Merger Guidelines, the Department of Justice and the Federal Trade Commission stated that one purpose of the new guidelines was to "clarify that merger analysis does not use a single methodology, but is a fact-specific process."²⁵ The 2010 guidelines contain language not found in the prior guidelines stating that the purpose of devising HHI guidelines is "not to provide a rigid screen."²⁶ Below, pursuant to the flexible approach that the FCC and other federal agencies have recently articulated, I undertake a preliminary analysis of the economics of the proposed transactions between Verizon and the cable companies. While the spectrum screen is discussed, I also address factors that are important to understanding the economic impact of this transaction that would not be considered under a strict application of a spectrum screen or HHI standard.

²¹ 15th Annual Competitiveness Report, FCC, June 27, 2011, p. 164, para 281.

²² 15th Annual Competitiveness Report, FCC, June 27, 2011, pp. 164-165, para 281.

²³ 15th Annual Competitiveness Report, FCC, June 27, 2011, p. 164, para 281.

²⁴ See, e.g., Statement of Julius Genachowski, FCC, Hearing on "Ensuring Competition on the Internet: Network Neutrality and Antitrust Law," Before the Subcommittee on Intellectual Property, Competition, and the Internet, Committee on the Judiciary, U.S. House of Representatives, May 5, 2011.

²⁵ Federal Trade Commission Press Release, "Federal Trade Commission Seeks Views on Proposed Update of the Horizontal Merger Guidelines," April 20, 2010, p. 1.

²⁶ Department of Justice and the Federal Trade Commission, *Horizontal Merger Guidelines*, April 20, 2010, p. 19.

V. ECONOMIC ISSUES RELEVANT TO THE PROPOSED TRANSACTION

A. The Economics of Capacity

16. A central outcome of economic models is that imperfectly competitive markets tend to have too little output relative to the social welfare maximizing level. An increase in output would lead to lower prices and more consumption. In economic models, increases in output are desirable as long as price is above marginal cost.
17. This simple prediction of economic models provides a convenient lens to examine the social welfare implications of spectrum assignment. If the market for wireless services is imperfect, then output is below the social welfare-maximizing level. All else equal, assignments of spectrum that create higher total output are more desirable relative to outcomes that would result in lower total output.
18. Indeed, the idea that spectrum should be assigned to those entities that are most likely to use the spectrum intensively was the initial rationale for the FCC's adoption of spectrum auctions as a means of assigning spectrum. As the FCC noted, because "a bidder's ability to introduce valuable new services and to deploy them quickly, intensively, and efficiently increases the value of a license to that bidder, an auction design that awards licenses to those bidders with the highest willingness to pay tends to promote... the efficient and intensive use of the spectrum."²⁷ However, the allocation of spectrum does not instantly create wireless services for consumers; spectrum owners must make investments in building out and utilizing that spectrum. The choices that incumbents make in building and using the spectrum after purchase will influence the extent to which the spectrum creates output useful for consumers.
19. In auctions, as well as transactions on the secondary market, there can be circumstances under which the acquiror of spectrum will not utilize the spectrum as "quickly, intensively, and efficiently" as another licensee might. There are two potential categories of circumstances where this can occur. Firstly, of course, the licensee's circumstances may change. In particular, information may be revealed after the license is awarded that

²⁷ Third Report and Order, FCC, May 10, 1994, p. 6, para 12.

makes the licensee less eager to invest in deploying communications infrastructure than the licensee expected it would be at the time that the license was awarded. For example, Cox cited the substantial costs of developing its own network and the difficulty of accessing the best handsets as the reasons for not developing a network based on the AWS licenses purchased at auction in 2006.²⁸

20. Secondly, under certain conditions a firm may face incentives to acquire spectrum with the intention to hoard or not to utilize it. Economic theory recognizes there are circumstances in which the owner that obtains the highest private value from controlling a scarce asset is not the owner that would create the most social value from that asset. The issue of hoarding is specifically addressed in analyses of spectrum auction policy.²⁹ In addition, the economics literature has addressed the possibility of a dominant firm having a high willingness-to-pay to hoard a scarce input that could be used by competitors, in the alternative, in a variety of settings.³⁰ In this scenario, the benefit to the licensee of owning the spectrum derives not from social welfare enhancing utilization, but from preempting rivals from building out that spectrum. That is, in addition to any value the firm derives from the spectrum, additional value is generated by preventing a rival from using that spectrum. The potential benefits of buying and hoarding spectrum are greatest for an established industry incumbent with a large market share. The large incumbent gains from hoarding spectrum because it is the incumbent's substantial existing profits that are protected from the competition that other firms could unleash using the spectrum. Appendix B lays out a formal economic model showing this.

B. Not All Spectrum is Equal

21. In evaluating the proposed transactions in this Docket, it is important to understand that different parts of the spectrum have different technical characteristics so that some

²⁸ Gabriel, Caroline, "Verizon adds Cox's spectrum to its LTE plan," *Rethink Wireless*, December 19, 2011, <<http://www.rethink-wireless.com/2011/12/19/verizon-adds-coxs-spectrum-lte-plan.htm>>, (Accessed on February 15, 2012).

²⁹ For example, see Crocioni, Pietro, "Is allowing trading enough? Making secondary markets in spectrum work," *Telecommunications Policy*, 2009, Vol. 33, pp. 451-468; Cave, Martin, "Anti-competitive behavior in spectrum markets: Analysis and Response," *Telecommunications Policy*, 2010, Vol. 34, pp. 251-261.

³⁰ For example, Borenstein (QJE, 1988) addresses this issue in the context of airlines and airport landing slots and Shaffer (BEJEAP, 2005) and Marx and Shaffer (JEMS, 2010) in the context of large packaged goods manufacturers and supermarket slotting allowances.

frequency bands are better suited for some purposes than others. Within the bands allocated for mobile broadband services in the U.S., it is commonly accepted that the lower the frequency the farther a signal will travel and be useful at a given power.³¹ In addition, frequencies below 1 GHz penetrate buildings more readily and thus are more valuable than higher frequencies. As a result, spectrum in the 700 MHz and 800 MHz bands is more valuable than higher frequency spectrum such as PCS and AWS.³² The Commission has recognized the fact that not all spectrum is equal in both its recent Qualcomm Order³³ as well as its Mobile Wireless Competition Reports.³⁴ The current approach to calculating a spectrum screen underestimates the impact of more valuable spectrum holdings on competition. Holders of the more valuable spectrum appear to have less market power in the Commission's screen than they actually have.

22. While spectrum can differ in its overall quality, it can also differ in its complementarity to existing competitors' infrastructure. For example, the spectrum being sold in this transaction is valuable to carriers other than Verizon, including T-Mobile. Practically all of the licenses held by T-Mobile are for spectrum in the PCS and AWS bands, with a considerable amount in the AWS band.³⁵ As a result, the spectrum at issue in this transaction would complement both T-Mobile's current holdings in the AWS band and the soon-to-be acquired spectrum from the break-up with AT&T to create a robust AWS footprint. Currently, T-Mobile is using its AWS spectrum primarily for its HSPA+ network.³⁶ The additional spectrum would be valuable for the deployment of LTE.³⁷

23. Additionally, the spectrum being sold in this transaction may be valuable to Metro PCS, which holds AWS and PCS spectrum in many markets of the U.S. In the fourth quarter

³¹ J.P. Morgan, "Spectrum Valuation Overview – Carrier by Carrier Base-Case Spectrum Value Across Wireless Industry." November 30, 2011, pp. 2, 8.

³² J.P. Morgan, "Spectrum Valuation Overview – Carrier by Carrier Base-Case Spectrum Value Across Wireless Industry." November 30, 2011, pp. 1, 2, 8.

³³ WT Docket No. 11-18, In the Matter of Application of AT&T Inc. and Qualcomm Incorporated For Consent to Assign Licenses and Authorizations, December 22, 2011, pp. 20-22, para 46, 49.

³⁴ 15th Annual Competitiveness Report, FCC, June 27, 2011, p. 169, para 289.

³⁵ T-Mobile has one cellular license in the Georgetown, SC RSA.

³⁶ Sarnataro, Valerie, "Apple iPhone 5 to Support T-Mobile's AWS Spectrum," *Brighthand*, January 11, 2012, <<http://www.brighthand.com/default.asp?newsID=18515&news=T-Mobile+iPhone+5+AWS+spectrum+support>>, (Accessed on February 17, 2012).

³⁷ Sarnataro, Valerie, "Apple iPhone 5 to Support T-Mobile's AWS Spectrum," *Brighthand*, January 11, 2012, <<http://www.brighthand.com/default.asp?newsID=18515&news=T-Mobile+iPhone+5+AWS+spectrum+support>>, (Accessed on February 17, 2012).

of 2010, Metro PCS was the first U.S. wireless provider to launch a network using LTE technology. Metro PCS has announced plans to further expand its LTE coverage by leveraging its AWS and PCS spectrum holdings.³⁸

C. The Distribution of Spectrum Does Not Fully Capture the Effect of a Transaction on Competitors

24. The Commission's spectrum screen is one of several tools the agency uses in its oversight of licensees. However, as discussed above, and as reflected in the Commission's flexible approach to merger and transaction review, the distribution of spectrum across firms does not necessarily correspond to the distribution of customers across firms. A simple spectrum screen analysis also does not speak to the issue of whether a proposed transaction may impact the ability of competitors who are not party to the transaction to compete in the marketplace.
25. This is particularly important in a situation where capacity constraints are tight. According to a recent survey of 38 "key decision makers" at wireless operators globally, global average peak network utilization rates were at 65 percent in 2011. In contrast to that, operators in the U.S. were reporting peak capacity utilization of 80 percent, which was the highest of any region in the world.³⁹
26. In the 15th annual CMRS report, the Commission noted that the weighted average HHI across U.S. cities was 2,848 in mid-2010, citing 2,500 as the threshold for considering a market to be "highly concentrated."⁴⁰ The report showed that, in August 2010, 68 percent of Americans were in local areas served by four or more wireless carriers, while 82 percent were in local areas served by three or more wireless carriers.⁴¹
27. Therefore, there are circumstances in which a substantial spectrum transaction could have important impacts on the ability of other carriers to compete effectively in the market or in a segment of the market. These circumstances are related to the two issues discussed

³⁸ 15th Annual Competitiveness Report, FCC, June 27, 2011, pp. 57, 161; Metro PCS Press Release, "MetroPCS Launches First 4G LTE Services in the United States and Unveils World's First Commercially Available 4G LTE Phone", September 21, 2010, < <http://investor.metropcs.com/phoenix.zhtml?c=177745&p=irol-newsArticle&ID=1473355&highlight=>>, (Accessed February 13, 2012); MetroPCS, Annual Report (Form 10-K), for the fiscal year ended December 31, 2010, p. 35.

³⁹ Credit Suisse, "IT Hardware and Global Telecom Equipment," August 31, 2011, p. 13.

⁴⁰ 15th Annual Competitiveness Report, FCC, June 27, 2011, p. 16.

⁴¹ 15th Annual Competitiveness Report, FCC, June 27, 2011, p. 43, Table 7.

above: that all spectrum is not alike, and that different firms have different incentives to utilize new potential capacity depending on their relative dominance in the market. The extent to which this concern applies to the proposed transactions is discussed below.

VI. IMPACTS OF THE SALE

A. Spectrum Transfer Impact

28. With the foregoing analysis in mind, the spectrum transfer at issue poses concerns in several of the largest U.S. markets due to the concentration of high-quality spectrum in Verizon's control. The following analysis describes Verizon's spectrum aggregation in the top 50 U.S. markets, and compares Verizon's current and to-be acquired AWS spectrum to that of other carriers.
29. As shown in Exhibit 1, Verizon currently holds AWS spectrum in 34 of the 50 top markets. If the spectrum transfer is approved, Verizon will receive at least 20 MHz of AWS spectrum from the cable companies for 46 of the 50 markets, thus securing AWS spectrum in all but one of the 50 largest markets. The company's holdings of AWS spectrum would increase from an average of 22 MHz to 34 MHz in its AWS-licensed markets within the top 50 U.S. markets. Verizon already has on average 29, 20, and 31 MHz of Cellular, PCS, and 700 MHz spectrum, in its licensed markets, respectively, within the top 50 markets. Thus, as a result of the transfer Verizon would hold a considerable amount of spectrum in each of the Cellular, PCS, AWS, and 700 MHz bands in nearly all of the top 50 markets.
30. Moreover, if this transaction is approved, Verizon would have the largest AWS license holdings in the top 50 markets, in addition to holding a 45 percent share of Cellular and 700 MHz spectrum licenses, as shown in Exhibit 1.⁴² AT&T has comparable Cellular and 700 MHz holdings, with 45 percent share in these bands. However, AT&T holds only 6 percent the AWS spectrum, on average, in the 18 markets in which it has AWS licenses. The spectrum holdings of the two largest wireless carriers stand in sharp contrast to T-

⁴² Licenses in the SMR and BRS bands are not included in the calculations.

Mobile's and those of smaller carriers like Metro and Leap, which are almost exclusively above 1 GHz.⁴³

31. Furthermore, Exhibit 2 shows that Verizon currently holds 27 percent of total spectrum in the Cellular, 700 MHz, PCS and AWS bands in the top 50 markets. For these bands, Verizon holds at least 35 percent of licensed spectrum, on average, in 6 markets, at least 30 percent in 12 markets and at least 25 percent in 31 of the top 50 markets, as shown in Exhibit 2. If this transaction is approved, however, Verizon's average share of spectrum in the Cellular, 700 MHz, PCS and AWS bands would increase to 32 percent. Verizon would hold, on average, at least 40 percent of the Cellular, 700 MHz, PCS and AWS spectrum in 6 of the top 50 markets and at least 30 percent in 33 markets. If the FCC approves this transaction Verizon will have less than 25 percent share of the Cellular, 700 MHz, PCS and AWS bands in only three of the 50 largest markets. In contrast, AT&T, Sprint, and T-Mobile hold 28 percent, 11 percent and 18 percent of total spectrum for these bands in the top 50 markets, respectively.⁴⁴ The increase in Verizon's share of total spectrum holdings for these bands positions it significantly ahead of other wireless carriers in the top 50 markets. It is important to note that these share figures do not account for the higher value of spectrum in the Cellular and 700 MHz bands, relative to spectrum in the PCS and AWS bands.

B. Verizon's Lack of Need for Capacity

32. According to Verizon's own public statements and reports of industry analysts, Verizon does not have a short-term or medium-term need for additional spectrum. Instead, Verizon has openly admitted that it is investing in additional spectrum now in anticipation of future data demands. Furthermore, reports by industry analysts show that a significant portion of Verizon's spectrum remains unused several years after it has been acquired and is likely to remain unused for several years into the future.

33. As described in Section VI.A, Verizon currently has considerable spectrum holdings in the top 50 U.S. markets. A significant portion of Verizon's spectrum holdings is

⁴³ T-Mobile has one Cellular license in the Georgetown, SC RSA.

⁴⁴ These values are population weighted averages. T-Mobile's holdings include licenses transferred from AT&T to T-Mobile as a condition of the merger cancellation.

currently not deployed. Verizon's 700 MHz license holdings are an example of spectrum that is currently in the initial stages of deployment.⁴⁵ These licenses constitute more than one third of the spectrum licensed to Verizon in the top 50 markets. Verizon acquired much of its 700 MHz spectrum at auction in 2008,⁴⁶ after which the company CEO announced that Verizon has a "sufficient [amount of] spectrum to continue growing our business and data revenues well into – and possibly through – the next decade..."⁴⁷ In 2009, Verizon announced that it would leverage the 700 MHz spectrum for deployment of LTE in 2010.⁴⁸ Its first LTE services were launched in December of 2010 and a year later Verizon's CFO stated that the company was in the "beginning stages" of deploying its 700 MHz spectrum and that the company does not see a need to look for new spectrum "at least until 2015."⁴⁹

34. Other Verizon spectrum that could generate efficiency gains with changes in utilization includes its Cellular and PCS spectrum. These frequencies are currently tied up in the company's 3G network.⁵⁰ Verizon has already announced its intentions to re-purpose this spectrum for use in LTE technology. For example, at the Wells Fargo Securities Technology, Media & Telecom (TMT) Conference in November 2010, a Verizon spokesperson stated the following: "over time as more and more of our 3G traffic starts to

⁴⁵ Fran Shammo, Verizon Communications Inc. at Morgan Stanley Technology Media & Telecoms Conference, November 17, 2011, p. 8.

⁴⁶ Verizon Press Release, "Verizon Wireless Says Spectrum Additions From FCC's Auction 73 Will Further Company's Broadband Strategy," April 4, 2008, <<http://news.verizonwireless.com/news/2008/04/pr2008-04-04.html>>, (Accessed on February 19, 2012).

⁴⁷ Verizon Press Release, "Verizon Wireless Says Spectrum Additions From FCC's Auction 73 Will Further Company's Broadband Strategy," April 4, 2008, <<http://news.verizonwireless.com/news/2008/04/pr2008-04-04.html>>, (Accessed on February 19, 2012).

⁴⁸ Verizon Press Release, "Verizon Wireless, Verizon Wireless Fosters Global LTE Ecosystem as Verizon CTO Dick Lynch Announces Deployment Plans", February 18, 2009, <<http://news.verizonwireless.com/news/2009/02/pr2009-02-18.html>>, (Accessed on February 19, 2012).

⁴⁹ Fran Shammo, Verizon Communications Inc. at Morgan Stanley Technology Media & Telecoms Conference, November 17, 2011, p. 8; Verizon Press Release, "Verizon Wireless, Verizon Wireless Launches The World's Largest 4G LTE Wireless Network on Dec. 5", December 1, 2010, <<http://news.verizonwireless.com/news/2010/12/pr2010-11-30a.html>>, (Accessed on February 17, 2012).

⁵⁰ Wells Fargo Securities, "LEAP/VZ: Spectrum Swap Announced," December 6, 2011, p.1; VZ-Verizon at Wells Fargo Securities Technology, Media & Telecom (TMT) Conference, November 10, 2010, pp. 2 and 5.

migrate to 4G, we will start to free up some of that cellular and PCS spectrum that we use today for 3G, and we will again use that spectrum to grow our 4G network.”⁵¹

35. Finally, Verizon currently has an average of 22 MHz of AWS spectrum in 34 of the top 50 markets.⁵² This spectrum remains undeployed more than five years after the close of the AWS auction in 2006.⁵³ According to one analysis, Verizon is not planning on beginning its deployment of AWS spectrum until 2013.⁵⁴ The company itself stated that it plans to use AWS for LTE, only after rolling out LTE at 700 MHz.⁵⁵

36. In light of the growing data demands and limited spectrum resources, the FCC should give careful consideration to the most efficient use of the spectrum that is available or potentially available on the secondary market. I showed in Section V that, as a matter of economics, it is possible that a large incumbent could have a higher willingness to pay for spectrum than a smaller market participant, and yet still not be planning to create as much new capacity for consumers as the smaller market participant would. Thus, it is possible that the AWS spectrum that Verizon proposes to acquire would be better utilized by a smaller market participant poised to undertake build out in the AWS band. For example, the Declaration of Neville R. Ray states that T-Mobile’s spectrum “has been fully utilized consistently” in contrast to Verizon’s “spectrum ‘overhead.’”⁵⁶

37. The transaction between SpectrumCo, Cox and Verizon, if consummated, would eliminate the potential opportunity for other market participants, including T-Mobile, to acquire valuable spectrum. This should be a matter of public concern because, as I have explained above, generally a smaller competitor would have an economic incentive to put this spectrum to use serving consumers as quickly and efficiently as possible, whereas Verizon may have an incentive to use the spectrum less quickly and less intensively, in order to limit overall output in the market and drive up prices.

⁵¹ VZ-Verizon at Wells Fargo Securities Technology, Media & Telecom (TMT) Conference, November 10, 2010, p. 5.

⁵² See Exhibit 1.

⁵³ 15th Annual Competitiveness Report, FCC, June 27, 2011, p. 161, para 274.

⁵⁴ Morgan Stanley, “Verizon. Quick Comment: LTE Labs Showcase Wireless Future,” September 6, 2011, p. 1.

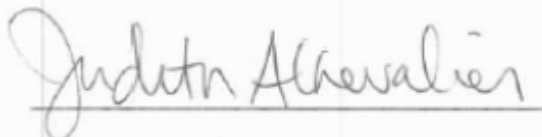
⁵⁵ J.P. Morgan, “Impact of Verizon Buying SpectrumCo – 20 MHz of AWS Spectrum Across ~260m pops,” December 2, 2011, p. 1.

⁵⁶ Declaration of Neville R. Ray, para 19.

VII. CONCLUSION

38. In conclusion, in its long-standing goal to promote the public interest in mergers and transfers of spectrum, the FCC has recognized that a flexible approach is needed in evaluating such transactions. Important economic factors in the spectrum market are difficult to analyze solely through the formulaic application of a "spectrum screen."
39. A dominant firm can face economic incentives to acquire and hoard a scarce asset, in order to disadvantage rival firms. An examination of the welfare effects of any spectrum transaction should consider whether the acquiror faces incentives to hoard spectrum. The spectrum transfer under consideration in this case poses concerns because of Verizon's substantial existing holdings of high-quality spectrum and the incentives it would face to hoard the spectrum newly acquired from SpectrumCo and Cox.
40. Verizon has clearly stated that its current spectrum holdings are sufficient for its business plan; the company has substantial spectrum holdings that are not currently being fully utilized and will not be fully utilized in the near future. The transaction between SpectrumCo, Cox and Verizon, if consummated, would eliminate the potential opportunity for other market participants, including T-Mobile, to acquire valuable spectrum. This should be a matter of public concern because generally, a smaller competitor would have an economic incentive to put this spectrum to use serving the public as quickly and efficiently as possible, while Verizon may instead have an incentive to use the spectrum less quickly and less intensively, in order to limit overall output in the market and drive up prices.

I declare under the penalty of perjury that the foregoing is true and correct.



Judith A. Chevalier
February 21, 2012

APPENDIX A

Curriculum Vitae

Judith A. Chevalier

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Primary Positions:

September 2007-June 2009, Deputy Provost for Faculty Development, Yale University.

February 2005-present, William S. Beinecke Professor of Economics and Finance, Yale School of Management.

June 2001- February 2005, Yale University School of Management, Professor of Finance and Economics.

July 1999-May 2001, University of Chicago, Graduate School of Business, Professor of Economics.

July 1997-June 1999, University of Chicago, Graduate School of Business, Associate Professor of Economics.

July 1994-June 1997, University of Chicago, Graduate School of Business, Assistant Professor of Economics.

July 1993 - June 1994, Harvard University, Department of Economics, Assistant Professor of Economics.

Other Positions:

Co-editor, *Rand Journal of Economics*, May 2009-present.

Prize committee, Fisher Black Prize, American Finance Association, 2008.

Editorial Board, *Journal of Industrial Economics*, 2006-2011.

Nominating Committee, American Economic Association, 2007-2008.

Nominating Committee, American Academy of Arts and Sciences, 2006, 2009, 2010.

Co-Editor, *American Economic Review*, November 2004-June 2007.

Steering Committee, Committee on Yale College Education, 2010- .

Chair, Faculty Section and Steering Committee, Committee on Yale Reaccreditation, 2008-2010.

Search Committee, American Economics Association committee for the editor of the AEA Journal of Microeconomics, Fall 2006.

Executive Committee, American Economic Association, January 2005- January 2008.
Elected member, Finance committee member. Member of ad hoc committee on journals.

Visiting Committee, MIT Economics Department, February 2005, February 2007, March 2011.

Member, Dean Search Committee, Yale School of Management, 2004- 2005, 2009-2010.

Chair, Yale University Committee on Cooperative Research, 2003-2006. Member, 2002-2003.

Member, Provost's Committee on Sexual Misconduct, 2009-2010

Member, Council of the Women's Faculty Forum, Yale University, 2003-present.

Member, Board of the Chief Executive Leadership Institute, 2005-present.

January 2002-December 2004. Board member, Committee on the Status of Women in the Economics Profession (CSWEP), American Economic Association.

January 2002-present. Fellow, Davenport College, Yale University. Member, Summer 2005, search committee for Davenport College Dean.

February 2003- October 2004. Editor, The B.E. Journals in Economic Analysis and Policy.

AEA Search Committee for Editor of the Journal of Economic Literature, 2003.

January 2002-present. Advisory Board, *Quantitative Marketing and Economics*.

January 2001-July 2002. Associate Editor, *American Economic Review*.

March 2000-September 2004. Associate Editor, The *Journal of Finance*.

American Finance Association nominating committee, 1999.

July 1999 – July 2002, Associate Editor, *Review of Financial Studies*.

January 1999 – December 2003, Associate Editor, *Quarterly Journal of Economics*.

January 1999 – December 2003, Associate Editor, *Journal of Economic Perspectives*.

July 1997-October 2004, Associate Editor, *Journal of Industrial Economics*.

January 1996-October 2004, Associate Editor, *Rand Journal of Economics*.

September 1999-present, Research Associate, National Bureau of Economic Research.

September 1993-September 1999, Faculty Research Fellow, National Bureau of Economic Research.

Consortium Faculty, Cardean University, Unext.com, 1999-2001. Consulted on design of web-based strategy course.

Research Interests:

Time use. Competition in high technology industries and telecommunications. Competition and regulation in retail industries; implications of retail pricing behavior for macroeconomics. Competition on the Internet and for information goods. The problems facing durable goods manufacturers. The interaction between firm capital structure and product market competition. The impact of liquidity constraints on markup, inventory, and capital expenditure cyclicalities. Testing models of agency and career concerns. The impact of “noise traders” on financial markets. Cross-subsidization of activities within conglomerate firms.

Education:

May, 1993, Ph.D., Economics, Massachusetts Institute of Technology.

May, 1989, B.A., *summa cum laude*, Yale University, Distinction in the Major, Economics.

Honors and Awards:

National Science Foundation research grant for 2011-2014, SBR 1128322, “Strategic Shoppers.”

William F. O’Dell Award, *Journal of Marketing Research*, 2011. For paper published in the *Journal of Marketing Research*, August 2006.

Elected member, American Academy of Arts and Sciences.

nominated paper, Smith Breeden prize, *Journal of Finance*, 1999. For paper published in the *Journal of Finance*, June 1999.

recipient, first annual Elaine Bennett Research Prize. This prize is intended to recognize research by a young woman in any area of economics. The prize is administered by the American Economic Association Committee on the Status of Women in the Economics Profession. Presented January 1999.

Alfred P. Sloan Foundation, Sloan Research Fellow, Awarded for 1997-1998, and 1998-1999 academic years.

Smith Breeden “Distinguished Paper” prize, *Journal of Finance*, 1995. Prize awarded for paper published in the *Journal of Finance*, September 1995.

National Science Foundation research grant SBR 94-14141 for 1994-1996.

Review of Economic Studies tour (one of seven doctoral students presenting work at conferences in Europe and Israel), Summer, 1993.

National Science Foundation Graduate Fellowship, 1989-1992.

Dickerman Prize, Yale University, for Best Senior Thesis in Economics, 1989.

Publications:

With Keith Chen, “Are Women Overinvesting in Education? Evidence from the medical profession,” forthcoming, *Journal of Human Capital*.

With Austan Goolsbee, “Are Durable Goods Consumers Forward Looking? Evidence from the College Textbook Market”, *Quarterly Journal of Economics* vol 124, November 2009.

With Keith Chen, "The Taste for Leisure, Career Choice, and the Returns to Education", *Economics Letters* Vol. 99 (May 2008), 353-356.

With Fiona Scott Morton, "State Casket Seller Restrictions: A Pointless Undertaking?", *Journal of Law and Economics*, August 2008.

With Dina Mayzlin, "The Effect of Word of Mouth on Sales: Online Book Reviews", *Journal of Marketing Research*, August 2006.

"What Do We Know About Cross-subsidization? Evidence from Merging Firms.", *Advances in Economic Analysis & Policy* 2004: Vol. 4: No. 1, Article 3.
<http://www.bepress.com/bejeap/advances/vol4/iss1/art3>

with Austan Goolsbee, "Valuing Internet Retailers: Amazon and Barnes and Noble", *Advances in Applied Microeconomics* 12: Organizing the New Industrial Economy, 2003.

with Austan Goolsbee, "Measuring prices and price competition online: Amazon vs. Barnes and Noble," *Quantitative Marketing and Economics* I (2), June 2003.

with Anil Kashyap and Peter Rossi, "Why don't price rise during periods of peak demand? Evidence from scanner data," *American Economic Review*, March 2003.

with Dennis Carlton, "Free riding and sales strategies on the internet," *Journal of Industrial Economics*, December 2001.

with Chris Avery, "Identifying Investor Sentiment from Price Paths: The Case of Football Betting," *Journal of Business*, October 1999.

with Glenn Ellison, "Are Some Mutual Fund Managers Better than Others? Cross-sectional Patterns in Behavior and Performance", *Journal of Finance*, June 1999.

with Chris Avery, "Herding over the Career," *Economics Letters*, June 1999.

with Glenn Ellison, "Career Concerns of Mutual Fund Managers," *Quarterly Journal of Economics*, May 1999.

with Chris Avery and Scott Schaefer, "Why Do Managers Undertake Acquisitions?: an Analysis of Internal and External Rewards to Acquisitiveness", *Journal of Law, Economics, and Organization*, April 1998.

with Glenn Ellison, "Risk Taking by Mutual Funds as a Response to Incentives," *Journal of Political Economy*, December 1997. Reprinted in P.L. Joskow and M. Waterson, eds., *Empirical Industrial Organization*, Edward Elgar, 2004.

with David S. Scharfstein, "Capital Market Imperfections and Countercyclical Markups: Theory and Evidence," *American Economic Review*, September 1996.

"Do LBO Supermarkets Charge More? An Empirical Analysis of the Effects of LBOs on Supermarket Pricing," *Journal of Finance*, September 1995.

"Capital Structure and Product Market Competition: Empirical Evidence from the Supermarket Industry," *American Economic Review*, June 1995. Reprinted in P.L. Joskow and M. Waterson, eds., *Empirical Industrial Organization*, Edward Elgar, 2004.

with David S. Scharfstein, "Liquidity Constraints and the Cyclical Behavior of Markups," *American Economic Review Papers and Proceedings*, May 1995.

Working Papers/Work in Progress:

With Dina Mayzlin and Yaniv Dover, "Promotional Reviews: An Empirical Investigation of Online Review Manipulation", January 2012.

With Chris Avery and Richard Zeckhauser, "The CAPS Prediction System and Stock Market Returns", NBER Working Paper 17298, August 2011. In revision.

With Anil Kashyap, "Best Prices", February 2011, NBER Working Paper 16680.

With Fiona Scott Morton and David Harrington, "Regulating Direct Cremations: The Cost of Seemingly Small Regulatory Changes", January 2011.

With Fiona Scott Morton and David Harrington, "Differentiated to Death", Yale School of Management working paper, April 2010.

with Austan Goolsbee, "Entry and Market Size: The College Textbook Market."

Popular Publications/ Teaching Cases:

With Jaan Elias, "Potash Corporation of Saskatchewan", Yale Case 11-031, October 2011.

New York Times, "A Carbon Cap that Starts in Washington", 12/16/07.

New York Times, "In Search of Wireless Wiggle Room", 10/21/07.

New York Times, "Welcome Stranger, Here's a Speeding Ticket", 9/2/07.

Slate, "Oversell" 12/12/06.

Financial Times, "The Pros and Cons of Entering a Market," *Financial Times Mastering Strategy Series*, November 1, 1999. Reprinted in *Mastering Strategy*, Prentice Hall, 2000

Financial Times, "When it Can be Good to Burn your Boats," *Financial Times Mastering Strategy Series*, October 25, 1999. Reprinted in *Mastering Strategy*, Prentice Hall, 2000

Teaching: "Competitor", Core class, Yale School of Management, Fall 2011.

"Technology Strategy", Yale School of Management, Fall 2009.

"Business, Public Policy, and the Information Economy", Yale School of Management, Spring 2012, Fall 2010, Spring 2007, Spring 2006, Spring 2005.

Undergraduate “Business, Public Policy, and the Information Economy”, Yale University, Spring 2010, Spring 2008, Spring 2007, Spring 2006, Spring 2005, Spring 2004.

PhD. level Industrial Organization, Yale Economics Department, Spring 2003.

Competitive Strategy, Yale School of Management. 2002-present.

Competitive Strategy, Graduate School of Business, University of Chicago. Two sections, Winter 2001. Three sections, Winter 2000. Two sections, Autumn 1996; three sections, Autumn 1997; three sections, Autumn 1998.

Competitive Strategy, Executive MBA Program (XP), University of Chicago. One section, Winter 2001.

PhD. Industrial Organization, Graduate School of Business, University of Chicago. Co-taught with Dennis Carlton and Josef Perktold, Autumn 1996 and Winter 1997.

Economics of the Firm, Graduate School of Business, University of Chicago, Executive MBA course. Taught in domestic executive program in Autumn 1995, taught in international executive program in Barcelona, July-August 1996.

Microeconomics, Graduate School of Business, University of Chicago, MBA course. Seven sections, 1994-1995. One section, Autumn 1999.

Industrial Organization, Department of Economics, Harvard University, Ph.D. course, Spring, 1994. Co-taught with Glenn Ellison.

Corporate Finance, Department of Economics, Harvard University, Ph.D. course, Spring, 1994. Co-taught with Andrei Shleifer.

Corporate Control and Governance, Department of Economics, Harvard University, Undergraduate Course, Spring, 1994.

Strategy teaching for the Business Advisor program for RSM McGladrey, Inc., Graduate School of Business, University of Chicago. Autumn 1999, Spring 2001, Spring 2002.

Research/Seminar Presentations:

ABA Section of Antitrust Spring Meeting, Washington DC (scheduled for 3/2012).

American Economic Association (4)

American Finance Association (2)

American Institute for Economic Research

Boston University, Department of Economics

Brigham Young University Department of Economics

Brown University Department of Economics

Carnegie Mellon University GSIA (2)

Center for Research in Securities Prices, University of Chicago

Chief Executive Leadership Institute

Columbia University Business School (2)

Columbia University, Department of Economics (2)

Cornell University, Applied Economics and Management

Cornell University Business School

Cornell University Department of Economics

Dartmouth College, Tuck School of Business (2)

Dartmouth College, Department of Economics.

Duke University, Department of Economics(2)
Duke University, Fuqua School of Business (2)
Econometric Society Winter Meetings
Federal Reserve Bank of New York
Free University of Brussels
Georgia Finance Forum
Harvard Business School (2)
Harvard University Department of Economics (3)
Harvard University, Kennedy School of Government
Harvard University Law School
International Industrial Organization Society (2)
Johns Hopkins University, Department of Economics
London School of Economics
Massachusetts Institute of Technology, Economics Department (4)
Massachusetts Institute of Technology, Sloan School of Management (2)
Milton Friedman Institute, University of Chicago.
National Bureau of Economic Research, Corporate Finance Group (3)
National Bureau of Economic Research, Ecommerce Group.
National Bureau of Economic Research, Economic Fluctuations (2)
National Bureau of Economic Research, Industrial Organization Group (5)
National Bureau of Economic Research, Monetary Economics Group (2)
New York University, Stern School of Business (3)
Northwestern University, Kellogg School of Business (3)
Northwestern University, Department of Economics
Ohio State University, Department of Economics (2)
Princeton University, Department of Economics and Woodrow Wilson School (2)
Purdue University, Department of Economics
QME Conference
Rutgers University, Department of Finance
Stanford University, Graduate School of Business (4)
Tel Aviv University
Texas A&M University, Department of Economics
U. des Sciences Sociales (Toulouse, France)
United States Department of Justice (2)
United States Federal Communications Commission
United States Federal Trade Commission (2)
University of Arizona, Finance Department
University of British Columbia, Summer industrial organization meeting
University of California at Berkeley, Haas School of Business (5)
University of California at Berkeley, Department of Economics
University of California at Los Angeles, Department of Economics
University of Chicago, Graduate School of Business (5)
University of Connecticut, Department of Agricultural Economics
University of Delaware, Department of Economics
University of Florida, College of Business Administration
University of Illinois, Department of Commerce and Business Administration (2)
University of Illinois at Chicago, Finance Department.
University of Indiana, Business School (2)
University of Maryland, College of Business and Management
University of Maryland, Department of Economics
University of Michigan, Department of Economics (2)
University of Michigan, School of Business Administration (2)
University of Minnesota, Department of Economics
University of Notre Dame, College of Business
University of Oregon, College of Business Administration
University of Pennsylvania, Wharton School (2)
University of Rochester, Simon School of Business

University of Southern California, School of Law
University of Toronto, Department of Economics
University of Wisconsin, Department of Economics
Washington University in St. Louis
Yale University, Department of Economics (3)
Yale University, School of Management (3)
Yale University, Law School (2)

Non-academic positions:

Board member, the Foote School, 2005-present. Co-Treasurer and Chair of Audit Committee, 2006- 2008. Treasurer and Chair of Finance Committee, 2009-present.

Submitted Expert Reports and Testimony:

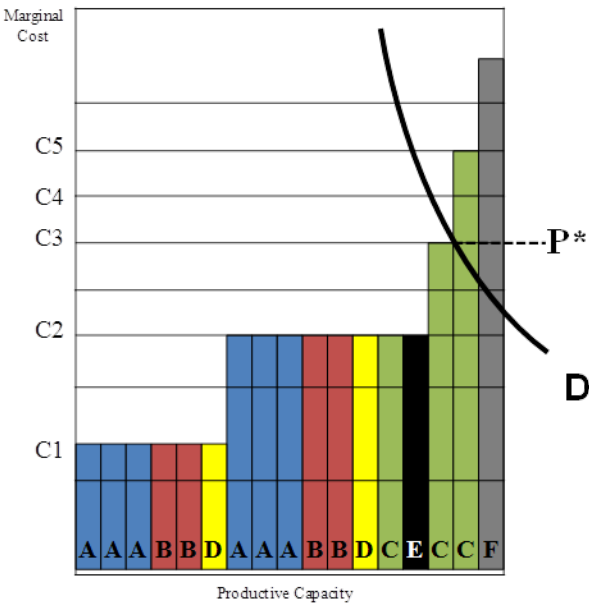
1. United States District Court, Southern District of Ohio
The Procter & Gamble Company v. The Coca-Cola Company, 1:02CV393
Report
2. American Arbitration Association
SESAC, Inc. v. Television Music License Committee, No. 13 133 01583 05
Report and testimony
3. United States District Court, District of New Hampshire
Presstek, Inc. v. Creo, Inc., Civil Action No. 05-CV-65-PB
Report and testimony
4. United States District Court, District of Delaware
Advanced Micro Devices, Inc., et al. v. Intel Corporation, et al., Civil Action No. 05-441-JJF
Report
5. United States District Court, District of Delaware
State of New York by Attorney General Eric T. Schneiderman, v. Intel Corporation,
Case No. 09-827 (LPS)
Report and testimony

APPENDIX B
A MODEL OF SPECTRUM UTILIZATION

The differential incentive of different market participants to build out new capacity can be illustrated with a very simplified and stylized model. Consider the market depicted in Figure 1. There are four firms, A, B, C, and D, each producing a homogeneous product. Each firm has productive capacity as shown along the X axis. Each unit of capacity has a marginal cost of producing output as shown on the Y axis of the figure.

Thus, for example, Firm A has 6 units of capacity, of which 3 units have a marginal cost of $c1$ to produce output and 3 units have a marginal cost of $c2$ to produce output. Firm B has 4 units of capacity, 2 of which have a marginal cost of $c1$ and 2 have a marginal cost of $c2$. Firm C has 3 units of capacity which have marginal costs of $c2$, $c3$, and $c5$, respectively. Finally, Firm D has 2 units of capacity, with marginal costs of $c1$ and $c2$. The unit of capacity labeled E is a newly available unit and involves a marginal production cost of $c2$.¹ The demand curve for the final output is illustrated in the figure and denoted by D.

Figure 1: Full Capacity Equilibrium



¹ For our illustrative purposes, it is unimportant what the units are, only that Firm A has substantially more capacity than Firm D.

It is difficult to predict the outcome in this market without knowing the game governing competitive interactions that the firms are playing. If the firms Bertrand compete on price and produce to full capacity, the equilibrium price in this market will be $P^* = c_3$ (with unit E in production as well as all of the others). In this case the capacities and marginal costs shown constitute the market supply schedule. Other oligopoly game scenarios may produce equilibrium prices of $P^* \geq c_3$.

We will contrast the scenarios in which Firm A owns unit E to the scenario in which Firm D owns unit E. If Firm A owns E and puts it into production as shown in Figure 1, Firm A's total profits in the market are:

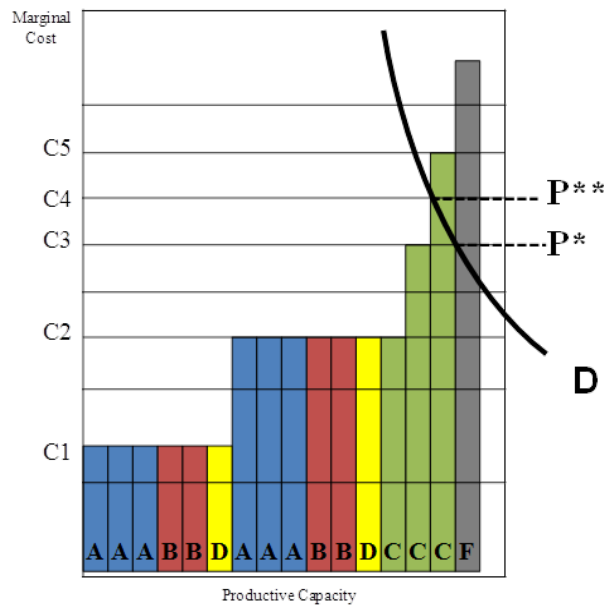
$$(7 \text{ units}) \times P^* - (c_1 \times 3 \text{ units}) - (c_2 \times 4 \text{ units}) = 7c_3 - 3c_1 - 4c_2$$

If Firm D owns unit E and produces with it, it earns profit:

$$(3 \text{ units}) \times P^* - (c_1 \times 1 \text{ unit}) - (c_2 \times 2 \text{ units}) = 3c_3 - c_1 - 2c_2$$

Now suppose that Firm A owns Unit E and does not produce with it, but holds it idle. That is, the Unit E is not “built out” and cannot be used. This is illustrated in Figure 2. The demand curve is exactly as before, but unit E removed from the supply schedule. Under this scenario, the demand curve crosses the supply schedule at $P^{**} = c_4$ rather than c_3 .

Figure 2: Undeployed Capacity Equilibrium



Firm A's profit becomes:

$$(6 \text{ units}) \times P^{**} - (c1 \times 3 \text{ units}) - (c2 \times 3 \text{ units}) = 6c4 - 3c1 - 3c2$$

If Firm D owns unit E and does not produce with it, Firm D's profit becomes:

$$(2 \text{ units}) \times P^{**} - (c1 \times 1 \text{ unit}) - (c2 \times 1 \text{ units}) = 2c4 - c1 - c2$$

Notice that Firm A is better off holding the capacity idle if:

$$6c4 - 7c3 + c2 > 0.$$

Or, equivalently:

$$6(c4 - c3) - (c3 - c2) > 0$$

The first term is the incremental profit from raising the price from $c3$ to $c4$. The second term is the profit lost from not selling an incremental unit at $c3$.

In contrast, Firm D is better off holding unit E idle if:

$$2(c4 - c3) - (c3 - c2) > 0$$

Again, the first term is the incremental profit from raising the price from $c3$ to $c4$, and the second term is the profit lost from not selling an incremental unit at $c3$.

Notice that, while both firms face the same lost profit from not producing one incremental unit of output, the price increase resulting from withholding production is incrementally beneficial to Firm A, because Firm A earns the price increase over more inframarginal units of production. Thus, if withholding a unit of production can function to raise the market price, withholding production is differentially attractive to the larger firm.

Intuition from the analysis above extends to more complicated situations. For example, a cost of building out unit E makes production less attractive for both Firm A and for Firm D. Furthermore, the intuition that withholding production can increase profits extends to the more subtle situation in which there are alternative uses for the capacity—one more production-intensive and one less production-intensive. The less intensive usage of the capacity will be differentially attractive to the firm with the larger installed capacity.

For example, consider a situation in which the unit E could be used either to create new output or could be used to lower the cost of producing existing output (for example, to lower cI). This usage of the new capacity may be particularly attractive to Firm A and could benefit Firm A by lowering its production costs. However, this usage of the capacity will not lower prices for consumers, because it lowers the cost of producing an inframarginal unit of output that does not play a role in determining the market price.

EXHIBIT 1

Average Spectrum Holdings (MHz) in Licensed Markets and Shares¹
Cellular, 700MHz, PCS, and AWS Bands
Top 50 Markets²

	Cellular			700MHz			Cellular and 700MHz Bands		PCS			AWS			PCS and AWS Bands	
	Average Spectrum (MHz)	No. of Licensed Markets	Spectrum Share	Average Spectrum (MHz)	No. of Licensed Markets	Spectrum Share	No. of Licensed Markets	Spectrum Share	Average Spectrum (MHz)	No. of Licensed Markets	Spectrum Share	Average Spectrum (MHz)	No. of Licensed Markets	Spectrum Share	No. of Licensed Markets	Spectrum Share
Verizon ³	29	41	47%	31	49	43%	49	45%	20	49	15%	22	34	16%	49	16%
Verizon + Cable ³	29	41	47%	31	49	43%	49	45%	20	49	15%	34	49	37%	49	24%
AT&T ^{4, 5}	29	44	51%	28	50	40%	50	45%	34	50	26%	15	18	6%	50	18%
Sprint	0	0	0%	0	0	0%	0	0%	35	50	27%	0	0	0%	50	16%
T-Mobile ⁵	0	0	0%	0	0	0%	0	0%	27	50	21%	32	50	36%	50	27%
Leap ³	0	0	0%	12	1	0%	1	0%	11	19	3%	14	29	9%	29	6%
MetroPCS	0	0	0%	12	1	0%	1	0%	18	12	3%	13	15	4%	19	4%

Notes:

- 1 Spectrum share is calculated as a carrier's total spectrum holdings in the top 50 markets divided by total licensed spectrum in the top 50 markets.
- 2 Spectrum holdings by Cellular Market Area (CMA) calculated as the population-weighted average of spectrum holdings by county within each CMA. Calculations do not incorporate SMR or BRS spectrum.
- 3 Verizon and Leap spectrum holdings are adjusted to reflect spectrum swap pending approval by the FCC.
- 4 AT&T spectrum holdings are adjusted to reflect its acquisition of Qualcomm licenses, which was approved by the FCC on December 22, 2011.
- 5 AT&T and T-Mobile spectrum holdings are adjusted to reflect AT&T's transfer of spectrum to T-Mobile, which is pending approval by the FCC.

Sources:

- [A] FCC license database.
- [B] Verizon Wireless-Cox Application materials are available at <http://transition.fcc.gov/transaction/verizonwireless-spectrumcocom.html>.
- [C] AT&T and Qualcomm WT Docket No. 11-18, available at <http://transition.fcc.gov/transaction/att-qualcomm.html>.
- [D] T-Mobile License and AT&T Mobility WT Docket No. 12-21, available at <http://transition.fcc.gov/transaction/tmobilelicense-atmobility.html>.
- [E] Verizon Wireless and Leap Wireless spectrum swap materials are available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0119/DA-12-69A1.pdf.

EXHIBIT 2

Verizon Spectrum Holdings
Cellular, 700MHz, PCS, and AWS Bands
Top 50 Markets¹

Market	POPs	Verizon		Verizon + Cable	
		Spectrum (MHz)	Spectrum Share	Spectrum (MHz)	Spectrum Share
[1] Los Angeles-Long Beach/Anaheim-Santa Ana-Garden Grove/Riverside-San Bernardino-Ontario, CA	17,174,570	91	27%	111	33%
[2] New York, NY-NJ/Nassau-Suffolk, NY/Newark, Jersey City and Paterson-Clifton-Passaic, NJ	16,808,740	119	35%	139	41%
[3] Chicago, IL	8,507,569	89	26%	109	32%
[4] Dallas-Fort Worth, TX	6,557,576	64	19%	84	25%
[5] Houston, TX	5,637,211	79	23%	109	32%
[6] Philadelphia, PA	5,289,675	99	29%	119	35%
[7] Atlanta, GA	4,914,273	89	26%	109	32%
[8] Washington, DC-MD-VA	4,809,725	109	32%	129	38%
[9] Detroit/Ann Arbor, MI	4,733,459	99	29%	119	35%
[10] Boston-Lowell-Brockton-Lawrence-Haverhill, MA-NH	4,508,380	97	29%	117	34%
[11] San Francisco-Oakland, CA	4,375,435	69	20%	89	26%
[12] Miami-Fort Lauderdale-Hollywood, FL	4,302,210	96	28%	116	34%
[13] Phoenix, AZ	4,087,980	82	24%	102	30%
[14] Minneapolis-St. Paul, MN-WI	3,133,944	119	35%	139	41%
[15] San Diego, CA	3,088,346	67	20%	87	26%
[16] Denver-Boulder, CO	2,804,706	79	23%	99	29%
[17] Baltimore, MD	2,655,604	109	32%	129	38%
[18] Seattle-Everett, WA	2,652,469	97	29%	117	34%
[19] St. Louis, MO-IL	2,636,325	77	23%	77	23%
[20] Tampa-St. Petersburg, FL	2,593,519	109	32%	129	38%
[21] San Juan-Caguas, PR	2,271,749	0	0%	0	0%
[22] Portland, OR-WA	2,119,028	67	20%	87	26%
[23] Sacramento, CA	1,973,687	69	20%	89	26%
[24] Pittsburgh, PA	1,959,627	87	26%	107	31%
[25] Las Vegas, NV	1,926,570	67	20%	87	26%
[26] San Antonio, TX	1,926,040	64	19%	84	25%
[27] Kansas City, MO-KS	1,867,083	89	26%	109	32%
[28] San Jose, CA	1,813,429	69	20%	89	26%
[29] Orlando, FL	1,787,599	84	25%	104	31%
[30] Cleveland, OH	1,781,739	124	36%	144	42%
[31] Indianapolis, IN	1,715,519	89	26%	109	32%
[32] Cincinnati, OH-KY-IN	1,689,049	111	33%	111	33%
[33] Salt Lake City-Ogden, UT	1,654,325	57	17%	77	23%
[34] Austin, TX	1,641,645	64	19%	84	25%
[35] Columbus, OH	1,580,339	97	29%	117	34%
[36] Milwaukee, WI	1,568,884	72	21%	92	27%
[37] Nashville-Davidson, TN	1,521,132	77	23%	97	29%
[38] Charlotte-Gastonia, NC	1,349,794	134	39%	154	45%
[39] Jacksonville, FL	1,339,750	82	24%	102	30%
[40] Raleigh-Durham, NC	1,333,905	134	39%	154	45%
[41] West Palm Beach-Boca Raton, FL	1,290,147	96	28%	116	34%
[42] Greensboro-Winston-Salem-High Point, NC	1,237,144	124	36%	144	42%
[43] Hartford-New Britain-Bristol, CT	1,200,820	89	26%	109	32%
[44] Memphis, TN-AR-MS	1,197,246	89	26%	109	32%
[45] Oklahoma City, OK	1,193,409	101	30%	121	36%
[46] Buffalo, NY	1,123,559	87	26%	87	26%
[47] Norfolk-Virginia Beach-Portsmouth, VA/NC	1,099,797	112	33%	132	39%
[48] New Orleans, LA	1,092,333	97	29%	117	34%
[49] Louisville, KY-IN	1,046,107	77	23%	97	29%
[50] Rochester, NY	1,037,977	89	26%	109	32%
Weighted Average for Top 50 Markets		91	27%	110	32%

Note:

- 1 Spectrum holdings by Cellular Market Area (CMA) calculated as the population-weighted average of spectrum holdings by county within each CMA. Calculations do not incorporate SMR or BRS spectrum. Verizon and Leap spectrum holdings are adjusted to reflect spectrum swap pending approval by the FCC. AT&T spectrum holdings are adjusted to reflect its acquisition of Qualcomm licenses, which was approved by the FCC on December 22, 2011. AT&T and T-Mobile spectrum holdings are adjusted to reflect AT&T's transfer of spectrum to T-Mobile, which is pending approval by the FCC.

Sources:

- [A] FCC license database.
[B] Verizon Wireless-Cox Application materials are available at <http://transition.fcc.gov/transaction/verizonwireless-spectrumcocox.html>.
[C] AT&T and Qualcomm WT Docket No. 11-18, available at <http://transition.fcc.gov/transaction/att-qualcomm.html>.
[D] T-Mobile License and AT&T Mobility WT Docket No. 12-21, available at <http://transition.fcc.gov/transaction/tmobilelicense-attmobility.html>.
[E] Verizon Wireless and Leap Wireless spectrum swap materials are available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0119/DA-12-69A1.pdf.

REDACTED - FOR PUBLIC INSPECTION

EXHIBIT B

Declaration of Neville R. Ray

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Application of Cellco Partnership d/b/a)	
Verizon Wireless and SpectrumCo LLC)	
For Consent To Assign Licenses)	WT Docket No. 12-4
)	
Application of Cellco Partnership d/b/a)	
Verizon Wireless and Cox TMI Wireless, LLC)	
For Consent To Assign Licenses)	

DECLARATION OF NEVILLE R. RAY

1. I, Neville R. Ray, am the Chief Technology Officer at T-Mobile USA, Inc. I joined T-Mobile in 2000 and have been involved in mobile radio technology for more than 20 years, including in the prior posts of Chief Network Officer and Senior Vice President for Engineering and Operations at T-Mobile. In my current capacity, I am responsible, among other things, for overseeing the management of the company's wireless network, which includes approximately 52,000 cell sites, as well as T-Mobile's WiFi HotSpot network in the U.S. I also oversee the continued growth of the current network along with the rollout and launch of future networks. My experience includes the many aspects of wireless network design and deployment including radio planning & optimization; wireless switching; base station equipment design, operation and maintenance; data transmission; cell site design and construction; transport facilities planning and management. Prior to joining T-Mobile, I was Vice President of Engineering and Operations for Pacific Bell Wireless, a GSM wireless operator in California. I also served as a Principal Consultant for PA Consulting, a UK/US management consulting firm.

I hold a BSc Honors Degree in Engineering, earned in London. I am a member of the Institution of Electronics and Electrical Engineers and of the Institution of Civil Engineers. I am also the chairman of 4G Americas, an industry association that promotes the advancement of 3GPP technologies such as GSM, HSPA and LTE.

2. In this Declaration, I will address two areas of concern for the Federal Communications Commission (“FCC”) as it assesses whether the proposed acquisition of spectrum by Verizon Wireless from SpectrumCo and Cox is in the public interest. First, I will discuss the fact that in the construction of wireless broadband networks, all spectrum is not equal. Thus, in applying its spectrum screen, the FCC must recognize that low-band spectrum (below 1 GHz) is intrinsically more useful and valuable for mobile broadband deployment than an equal quantity of high-band (such as AWS, PCS, or BRS) spectrum. Low-band spectrum enables the construction of mobile broadband networks using significantly less infrastructure, while providing greater coverage and better user-perceived coverage reliability than networks solely operating on high-band spectrum. Unless the FCC differentiates between low-band and high-band spectrum, the licensees of low-band spectrum – Verizon Wireless in particular – will increase their significant competitive advantage to the detriment of wireless consumers as a whole and licensees like T-Mobile that are solely reliant upon high-band spectrum. I will also discuss the fact that much of the spectrum that Verizon Wireless proposes be added to the screen is not suitable for wireless broadband, and should continue to be kept out of the screen.

3. The second area I address is the fact that Verizon Wireless has far less incentive, if it is allowed to acquire the Cable Companies’ spectrum, than smaller carriers like T-Mobile have to deploy that spectrum quickly, effectively, and efficiently to provide broadband service to consumers in the United States. This is because Verizon Wireless already holds a market

dominating portfolio of spectrum licenses – especially in the most desirable low-band spectrum below 1 GHz and greenfield spectrum ideal for 4G service.¹ Yet much of Verizon Wireless’ already significant holdings of AWS spectrum holdings lie fallow today. This is despite the almost complete clearance of legacy users from the AWS band and the ready availability of AWS-capable devices. Instead Verizon Wireless has chosen to hold this spectrum in reserve for future use, giving it plenty of “headroom” to open new services to which users can move at leisure, while putting no constraint on its older “legacy” services.

4. Operating under much greater spectrum constraints than Verizon Wireless, T-Mobile has rolled out its 4G network, by deploying the AWS spectrum it won at auction in 2006. Since clearing AWS spectrum market by market, T-Mobile has made intensive use of its spectrum licenses so that today almost all T-Mobile’s spectrum holdings are used to provide consumers with wireless services. Because T-Mobile is intensively using its AWS spectrum to provide current services, it is now starting a complex and costly program of [*****BEGIN CONFIDENTIAL***]** [REDACTED] [*****END CONFIDENTIAL*****]. However, this is a near- and medium-term solution only, and no matter how clever T-Mobile may be, as usage grows, T-Mobile will simply need more spectrum to effectively compete. Among other things, T-Mobile faces constraints that will keep it from having the same spectrum depth for LTE as others.

¹ Deutsche Bank Markets Research, “Key Updates on Major Spectrum Deals,” Feb. 5, 2012 at p.1: “[Verizon Wireless] already controls more 4G spectrum than AT&T, Sprint and T-Mobile combined.”

The Differing Suitability of Spectrum for Wireless Broadband.

5. Treating all spectrum the same masks the inherent competitive strength of more valuable low-band spectrum and unjustifiably elevates the competitive value of less valuable high-band spectrum.

6. As the FCC has repeatedly observed: “Lower frequency bands ... possess more favorable intrinsic spectrum propagation characteristics than spectrum in higher bands. ‘Low-band’ spectrum can provide superior coverage over larger geographic areas, through adverse climate and terrain, and inside buildings and vehicles.”²

7. Likewise, market participants have also noted that the lower frequency bands have advantages in rural areas.³

8. As a result of its superior propagation characteristics, networks using low-band spectrum can generally be constructed to serve the same number and distribution of users at much less expense, because fewer and more widely dispersed cell sites can be deployed. Because spectrum propagation varies inversely with the square of frequency, spectrum at 700 MHz can cover the same area with as few as one-fourth to one-fifth as many cell sites as would be required in the AWS band and provide better in-building signal penetration. The FCC has recognized this: “Low-band spectrum can provide the same geographic coverage, at a lower cost than higher-frequency bands.... A licensee that exclusively or primarily holds spectrum in a higher frequency range generally must construct more cell sites (at additional cost) than a

² *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, Fifteenth Annual Report, WT Docket No. 10-133, FCC 11-103, 26 FCC Rcd 9664 at para. 292, Tables 1 and 2 (2011) (“*Fifteenth Annual Report*”).

³ *Application of AT&T Inc. and Qualcomm Inc. for Consent to Assign Licenses and Authorizations*, Memorandum Opinion and Order, WT Docket No. 11-18, FCC 11-118, para. 49 (2011) (“*AT&T-Qualcomm Order*”).

licensee with primary holdings at a lower frequency in order to provide equivalent service coverage, particularly in rural areas.”⁴

9. Conversely, spectrum in the EBS and BRS 2.5 GHz bands has below average signal propagation and building penetration. Licensees must construct more cell sites while getting suboptimal consumer coverage experiences and there are fewer handsets and infrastructure products available that use this spectrum. Both of these factors result in higher expenses for providers and thus for consumers.

10. Some parts of the spectrum currently included in the screen are simply not usable for wireless broadband now for technical or regulatory reasons, and should be removed. For example, the FCC has already recognized that “broadband operations using [a portion of] SMR spectrum have not been shown to be viable pending completion of 800 MHz rebanding, given the interference protection provided to neighboring public safety operations. In addition, the commercial SMR spectrum in the 900 MHz band currently is interleaved with Business/Industrial/Land Transportation services, and thus is better suited for narrowband deployments.”⁵ Likewise, the 700 MHz D Block has not been auctioned and Congress has passed legislation to remove it from the pipeline for commercial services.⁶

11. Verizon Wireless (see Public Interest Statement at 29-33) has proposed various other spectrum bands for inclusion in the screen, but none of them is suitable for inclusion. For example, only 55.5 MHz of the BRS spectrum has been included in the screen. The FCC has repeatedly rejected arguments to include the remainder of the BRS spectrum comprised of the Middle Band Segment (“MBS”), BRS Channel 1, and J and K bands, and its inclusion remains

⁴ *Fifteenth Annual Report* at para. 293.

⁵ *Fifteenth Annual Report* at para. 290.

⁶ H.R. 3630 at § 6101.

unwarranted. The MBS channels are not suitable since they are subject to interference from high-power video operations. The J and K guard bands are not suitable since they are secondary to adjacent-channel operations and are only 1/3 MHz wide. BRS Channel 1 is not contiguous to other BRS channels, and is adjacent to EBS Channel A1, which is not included in the screen. Other carriers have also argued that it is not suitable for mobile use since it is subject to interference and encumbered with three other co-primary uses.⁷

12. EBS, another Verizon Wireless candidate for addition, was allocated for educational and cultural use by school and universities. While excess capacity in the spectrum may be leased for commercial use, it is still subject to primary use as an educational tool. In addition, its technical character makes it difficult to use for commercial purposes in rural areas.

13. With regard to MSS/ATC (LightSquared, DISH) spectrum, the availability of this spectrum for wireless broadband is speculative at best, and its inclusion remains unwarranted. In response to NTIA concerns regarding GPS interference, the FCC's International Bureau is proposing to vacate the LightSquared conditional authorization to provide wireless mobile services and suspend indefinitely LightSquared's underlying ATC authorization.⁸ And the DISH transfer application and waiver request to provide terrestrial service using the Mobile Satellite Service S band spectrum are still pending, with the waiver request in particular proving controversial.

14. The Wireless Communication Service (WCS) band is adjacent to the Satellite Digital Audio Radio Service (SDARS) band and technical limitations to avoid interference

⁷ *Sprint Nextel Corporation and Clearwire Corporation Applications for Consent to Transfer Control of Licenses, Leases, and Authorizations*, WT Docket No. 08-94, Memorandum Opinion and Order, 23 FCC Rcd 17570, paras. 59, 68 (2008) ("*Sprint Nextel-Clearwire Order*").

⁸ See Public Notice, "International Bureau Invites Comment On NTIA Letter Regarding LightSquared Conditional Waiver, IB Docket No. 11-109, released Feb. 15, 2012.

prevented use of this spectrum for mobile services. In May 2010, the FCC revised the rules to protect SDARS but allow mobile operations. This spectrum should continue to be excluded since the new technical rules are still under appeal. Moreover, there is no commercial equipment that uses this band available in the US market today, suitable for providing 4G services under the current restrictive technical limitations.

Relative Incentives to Achieve Spectrum Efficiency.

15. As noted above, Verizon Wireless already, even before the proposed transaction, has a considerable spectrum advantage over T-Mobile. As of the FCC's *Fifteenth Annual Report* (Table 28), the FCC estimated that Verizon Wireless had average spectrum holdings of 83.4 MHz, with 51.7 MHz below 1 GHz, while T-Mobile, by contrast, had 47.7 MHz, *none* of it below 1 GHz except for one cellular license in a small South Carolina CMA.²

16. Not having Verizon Wireless' historic luxury of being able to warehouse licenses, T-Mobile has led the industry in quickly and efficiently deploying spectrum, especially in the AWS band. By contrast, Verizon Wireless is likely to continue to warehouse its AWS spectrum to meet anticipated future, not present needs, just as it has historically done. For example, Verizon Wireless makes limited use of its 20 MHz of AWS spectrum covering about 2/3 of the country today, though it has held this spectrum since it was auctioned in 2006, as well as the 12 MHz of 700 MHz Block A spectrum, which it has held since 2008. Evidently, Verizon Wireless plans to wait for suitable technology so that it can combine the SpectrumCo and Cox AWS spectrum with its existing AWS spectrum before using it to provide consumer broadband. In his

² Since then, T-Mobile has increased its holdings slightly (to a comparable nationwide number (as used in the *Fifteenth Annual Report*) of about [***BEGIN CONFIDENTIAL***] [REDACTED] [***END CONFIDENTIAL***]), and would gain more (to [***BEGIN CONFIDENTIAL***] [REDACTED] [***END CONFIDENTIAL***]) if the assignment to it of AT&T spectrum pursuant to the break-up is approved by the FCC. However, this will only make a small difference in the disparity.

Declaration, Mr. William Stone, Verizon Wireless' Executive Director of Network Strategy, states that Verizon Wireless will use the new spectrum, combined with its existing AWS holdings, to supplement its 700 MHz spectrum for this purpose. He explains that "Our other spectrum holdings are either not available or not as suitable for this purpose as is AWS. Our cellular (850 MHz) and PCS (1.9 GHz) licenses are fully deployed to provide our nationwide CDMA Ev-DO Rev A and 1X services, which currently carry the lion's share of our data and SMS traffic and all of our voice traffic."¹⁰ In other words, under Verizon Wireless' approach, it seeks only to pad further its already more-than-sufficient spectrum "headroom" to deploy LTE at its leisure instead of using the efficiency-maximizing techniques we and other smaller carriers have used and are using to speed deployment.

17. This spectrum "overhead" is a luxury that most carriers – such as T-Mobile – do not have. T-Mobile does not have sufficient spectrum to bank large contiguous spectrum blocks while it accumulates more spectrum to provide LTE alongside its legacy services. Rather, T-Mobile's spectrum has been fully utilized consistently. Instead, T-Mobile must find ways to use its existing spectrum ever more efficiently, freeing up capacity to serve consumers.

18. The primary process we use to maximize efficient use of our spectrum is

[***BEGIN CONFIDENTIAL***]

¹⁰ Application of Cellco Partnership d/b/a Verizon Wireless and Cox TMI Wireless, LLC for Assignment of Licenses, File No. 0004996680, Declaration of William H. Stone, Executive Director, Network Strategy, Verizon Wireless, para. 28 ("*Stone Declaration*").

[REDACTED] *****END**
CONFIDENTIAL*]**

19. As part of this process, we must *****BEGIN CONFIDENTIAL***]** [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] *****END CONFIDENTIAL***]**

20. Once we have successfully *****BEGIN CONFIDENTIAL***]** [REDACTED]

[REDACTED] *****END CONFIDENTIAL***]** we can *****BEGIN**
CONFIDENTIAL*]** [REDACTED] *****END**
CONFIDENTIAL*]**. Prior to doing that, there is a significant amount of work that we must
do on the existing *****BEGIN CONFIDENTIAL***]** [REDACTED] *****END CONFIDENTIAL***]**
network to prepare for this transition. We must carry out new *****BEGIN**
CONFIDENTIAL*]** [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] *****END CONFIDENTIAL***]**. We have

also been at the forefront of using WiFi as a complement to licensed spectrum for capacity
offload and coverage enhancement.

21. This all takes time, careful planning, and expense. While this [***BEGIN CONFIDENTIAL***] [REDACTED] [***END CONFIDENTIAL***] is going on and when it is done, we must install all the equipment and build and modify cell sites to support the new services.

22. Notwithstanding the complexity, expense and consumption of time and internal resources this process requires, T-Mobile has successfully carried out this process in the past on a smaller scale and is committed to doing so in the future. But T-Mobile's customers continue to demand more and more data usage, and to compete successfully, we must meet this demand.¹¹ There are limits to what we can do with existing spectrum, however, including limits to our ability [***BEGIN CONFIDENTIAL***] [REDACTED] [***END CONFIDENTIAL***] no matter how much efficiency we wrest out of what we have today. For this reason, even to the extent we might be able to locate new spectrum, we will be highly motivated to continue our efficiencies, as demand growth continues inexorably. Other spectrum-constrained carriers have similar incentives, but Verizon Wireless does not.

23. Verizon Wireless has no need to engage in [***BEGIN CONFIDENTIAL***] [REDACTED] [***END CONFIDENTIAL***] on the scale described above. With its unused AWS spectrum and underused 700 MHz spectrum, it can simply deploy new technologies without the complexities and additional costs of migrating existing users, and without [***BEGIN CONFIDENTIAL***] [REDACTED] [REDACTED] [***END CONFIDENTIAL***] as we must do. In other words, Verizon Wireless does not face the same challenges that we and others face and

¹¹ See Wall Street Journal, "Confessions of an iPhone Data Hog", Jan. 27, 2012, citing an survey showing T-Mobile customers use the most data bandwidth of any of the four largest carriers: "An NPD Connected Intelligence study of 700 Android smartphone users found they used 724 megabytes per month on AT&T's network. The average was 1.7 gigabytes on T-Mobile, 902 megabytes on Verizon Wireless and 1.2 gigabytes on Sprint."

does not have the same incentives to use even its existing spectrum, let alone the SpectrumCo and Cox spectrum, as efficiently as we and others do and would.

24. Punctuating the last point, the LTE handsets currently marketed by Verizon Wireless do not work on the AWS band. Indeed, Verizon Wireless has produced no handsets at all, including for LTE, to operate in AWS, even though Verizon Wireless has held substantial AWS assets since the conclusion of Auction No. 66 over five years ago. By contrast, T-Mobile has been a pioneer in the band, clearing it of extensive federal government uses in only two years, and developing new and unique equipment for the band to deploy advanced broadband services for our customers rapidly and efficiently. Moreover, Verizon Wireless' Public Interest Statement and technical declarations provide no insight on the LTE technology features it plans to employ even at this date to put this spectrum to use with their existing network. Other operators (Sprint, AT&T, Clearwire) have already announced that they plan to move to LTE-Advanced using unused or refarmed spectrum. Verizon Wireless, on the other hand, has been largely silent about its future intentions for network evolution. [***BEGIN

CONFIDENTIAL***] [REDACTED]

[REDACTED]


[REDACTED] [***END CONFIDENTIAL***] and to address the spectrum constraints T-Mobile faces that I describe above.

[SIGNATURE ON NEXT PAGE]

REDACTED - FOR PUBLIC INSPECTION

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge, information, and belief.

Executed this 21st day of February, 2012.



Neville R. Ray

REDACTED - FOR PUBLIC INSPECTION

EXHIBIT C

Declaration of Peter Cramton

Declaration of Peter Cramton

I, Peter Cramton, hereby declare the following:

Qualifications

1. I am Professor of Economics at the University of Maryland and Chairman of Market Design Inc. My specialty is the design of complex auction markets. Since 1993, I have contributed extensively to the development of spectrum auctions. I have advised ten governments on spectrum auctions, including the United States. I am currently advising the United Kingdom, Canada, and Australia on 4G auctions. I have advised 36 bidders in major spectrum auctions around the world. I have written dozens of widely-cited practical papers on spectrum auctions. This research is available at www.cramton.umd.edu/papers/spectrum.

Summary

2. I have been asked by T-Mobile USA, Inc. to comment on the FCC's spectrum screen as it should be applied to Verizon's proposed acquisition of spectrum from SpectrumCo and Cox.
3. The current screen is ineffective in measuring the competitive effects of spectrum acquisitions, especially since the screen is meant to establish a safe-harbor presumption of no anticompetitive effect. The screen must be revised to address its chief flaw: the screen treats all mobile broadband spectrum as equal regardless of its frequency.
4. In fact, the different bands have quite different propagation characteristics, which make them more or less valuable for providing mobile broadband service. The low-frequency spectrum below 1 GHz allows much improved coverage depth (within buildings and other obstructions) and breadth (in less populated areas) compared with the spectrum above 1 GHz. This coverage advantage is an important competitive advantage, which makes the low-frequency spectrum much more valuable than the high-frequency spectrum. The value per MHz can differ by a factor of 10 or more, as demonstrated in recent auctions in Germany and Italy. Thus, a provider having a relatively smaller allocation of high-quality spectrum can be in an advantageous position compared to a provider with only lower-quality spectrum, even if the latter has considerably more spectrum than the former measured in MHz.
5. While purporting to establish a presumption of no competitive harm, the current screen in fact permits, and even encourages, an unlimited concentration of the most valuable spectrum, such as the cellular and 700 MHz bands, in the hands of a few carriers. Unless the screen is improved, it will allow this trend to continue.
6. A simple and beneficial revision to the screen is to weight the spectrum holdings in different bands by relative values. Value-based measures are used in many industries where quantities alone are misleading due to substantial quality differences of the product.
7. The relative value differences across bands are well-understood by market participants and industry experts and are reported in investment banking studies that analyze the competitive advantages to

the holders of the different bands. They are also fairly stable. Under a value-based screen the FCC would assign weights to each band, such as the following (explained later in the declaration):

Band	Value weight
Cellular	1.7
700 MHz	1.5
SMR	1.5
AWS/PCS	.75
BRS	.20

8. Then the carrier's total spectrum holdings would be calculated as the value-weighted sum of its holdings. The spectrum screen is triggered in any region where the carrier's value-weighted sum exceeds a threshold, such as one-third of the total of all spectrum calculated on the same weighted basis.
9. The value-based screen greatly improves the measurement of the capability of the spectrum holdings and therefore improves the screen's usefulness as a proxy for competitive effects. With this improved measure, the screen can be adjusted to increase the chance that problematic transactions are identified.
10. In sum, consistent with practice in past proceedings, the FCC should revise the spectrum screen to improve its ability to detect problematic spectrum aggregation. The screen should be value-weighted to reflect substantial differences in the quality of the spectrum in different bands.

The spectrum screen is flawed and must be revised

11. The FCC has used a variety of spectrum caps and spectrum screens over the years as a policy tool to encourage effective competition. This policy has consistently recognized that allowing any carrier to acquire an excessive share of the essential spectrum input could result in higher prices and less consumer benefit from wireless service.
12. Since 2004, the spectrum screen has been the primary instrument used in evaluating whether spectrum transactions should be subject to in-depth scrutiny for potential anticompetitive impact in a given market. Unfortunately, the spectrum screen in its current form is a poor instrument for this purpose. The screen can be improved to ameliorate its greatest flaw: its failure to measure the relative competitive value of different bands of spectrum.
13. The screen serves as a safe harbor guideline. Transactions that would result in spectrum holdings that fall below the screen are deemed presumptively to be in the public interest without further market evaluation. The effectiveness of such a screen depends on how well the screen measures competition concerns. This will happen only if it ensures that the safe harbor covers only acquisitions that pose no competitive concerns. Since the screen is not a cap and does not establish a presumption of competitive harm, companies have an opportunity to argue the merits of a transaction that exceeds the screen. Since 2004, the screen has been revised several times as part of

spectrum acquisition reviews. The current screen is 145 MHz—approximately one-third of the available mobile broadband spectrum. However, the FCC recently alluded to its interest in reducing the screen to 141 MHz in the context of AT&T’s purchase of 700 MHz spectrum from Qualcomm.

14. To illustrate the problem with the current screen, note that the screen as currently applied would allow a single carrier to hold *all* the low-frequency spectrum—700 MHz, SMR, and Cellular—since the low-frequency spectrum comprises less than one-third of the total on a per MHz basis. In contrast a value-based screen where the bandwidth is weighted by relative values would give the correct answer in such a situation—the screen would be triggered.

The spectrum screen should not treat all spectrum the same

15. The value of the spectrum varies a great deal based on the frequency band. These value differences have grown as additional bands have been made available to address the rapid increase in mobile broadband demand.
16. The different bands have much different propagation characteristics that make the spectrum more or less suitable for mobile broadband use. To illustrate, Figure 1 shows the coverage for three different bands, 800 MHz, 1800 MHz, and 2.6 GHz, as a function of the number of cell sites in the UK to achieve a downlink speed of at least 1.2 Mbps with 20 MHz of spectrum. With 800 MHz, 98% coverage is achieved with only 2,000 sites. With 1800 MHz, more than 10,000 sites are required to achieve 98% coverage. With 2.6 GHz, even 20,000 sites are not enough to achieve 98% coverage. The low-frequency spectrum allows a high level of coverage with a small fraction of the number of sites, and hence much less capital expense. These technical differences among the bands create substantial value differences.

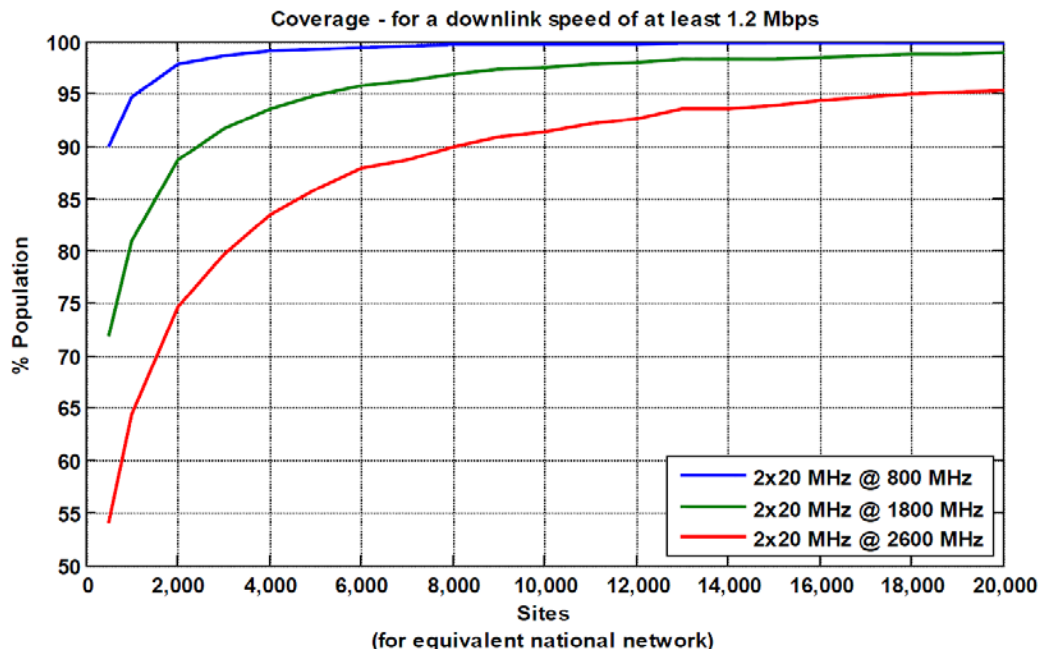


Figure 1. Coverage as a function of the number of sites for three different bands.
Source: Ofcom’s second consultation on assessment of future mobile competition and proposals for the award of 800 MHz and 2.6 GHz spectrum and related issues (2012).

17. The substantial value difference among the bands is well understood by all market participants and is reflected in market valuations and spectrum prices. Both the FCC and the DOJ have recognized the substantial differences in the value of the different bands for mobile service: “As the Commission and DOJ have recognized, spectrum resources in different frequency bands can have widely disparate technical characteristics that affect how the bands can be used to deliver mobile services. The more favorable propagation characteristics of lower frequency spectrum, (i.e., spectrum below 1 GHz) allow for better coverage across larger geographic areas and inside buildings.” (FCC 11-188 at pp. 21-22)
18. Recent multi-band auctions in Europe illustrate the substantial value difference across the bands. The 2010 auctions in Germany and Italy were the most recent large competitive auctions. The prices of 2x5 MHz lots of 800 MHz and 2.6 GHz spectrum in these auctions are shown in Figure 2. In Germany, each 2x5 MHz lot of 800 MHz sold for about €600 million; whereas each 2x5 MHz lot of 2.6 GHz sold for less than €20 million. In Italy, each 2x5 MHz lot of 800 MHz sold for about €500 million; whereas each 2x5 MHz lot of 2.6 GHz sold for about €36 million. In these recent competitive auctions, the bidders valued the 800 MHz spectrum at 15 to 30 times more than the 2.6 GHz spectrum.

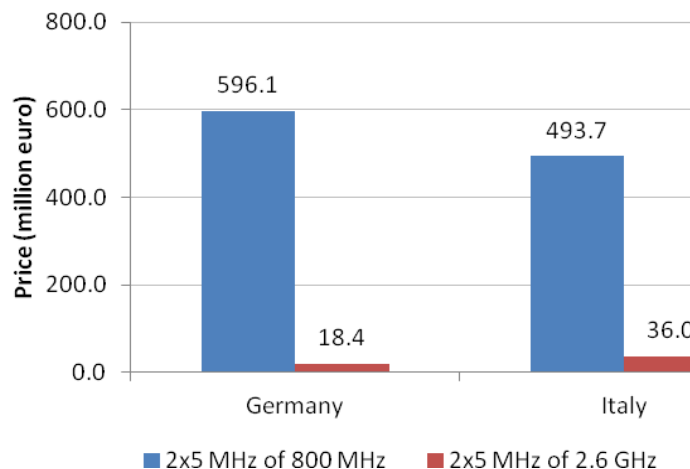


Figure 2. Price of 2x5 MHz of 800 MHz and 2.6 GHz in Germany and Italy 4G auctions of 2010.

19. Recent US auctions and other transactions discussed later also confirm the disparity of spectrum values across bands.
20. The implication of these market facts is that it makes little sense to use a screen that treats all spectrum the same for the purpose of competitive analysis. Rather the screen should be value based. Such an approach is typically taken in industries where there is substantial heterogeneity in value. For example, when evaluating market shares in diamonds the shares are always in value terms, rather than carats (weight). Similarly, real estate shares are stated in value terms, rather than acres. In all three industries, value differences are so large that a pure quantity-based measure (MHz, carats, or acres) would be misleading.

21. Treating all spectrum as equal is an improper simplifying assumption. This may have been a useful assumption when the original spectrum cap was introduced in 1994. Then we had little information about relative values and there was less disparity among the bands. However, with the introduction of more spectrum both above and below 1 GHz, dramatic changes in the mobile broadband market, and much better information about relative values, including many auctions and secondary market transactions, this simplistic approach has long become counterproductive.
22. Verizon's strong position in the wireless market has to a large extent come from the better coverage it has been able to offer as a result of holding such a dominant position in the low-frequency spectrum. By 2000 Verizon held roughly one-half of the low-frequency spectrum, about 25 MHz of cellular spectrum. In 2008, this dominance was threatened with the 700 MHz spectrum auction. Verizon understood this potential threat and bid aggressively for and won 49% of the 700 MHz spectrum as shown in Figure 3. This purchase, which did not trigger the simplistic screen, let Verizon sustain its dominant position in the low-frequency spectrum.

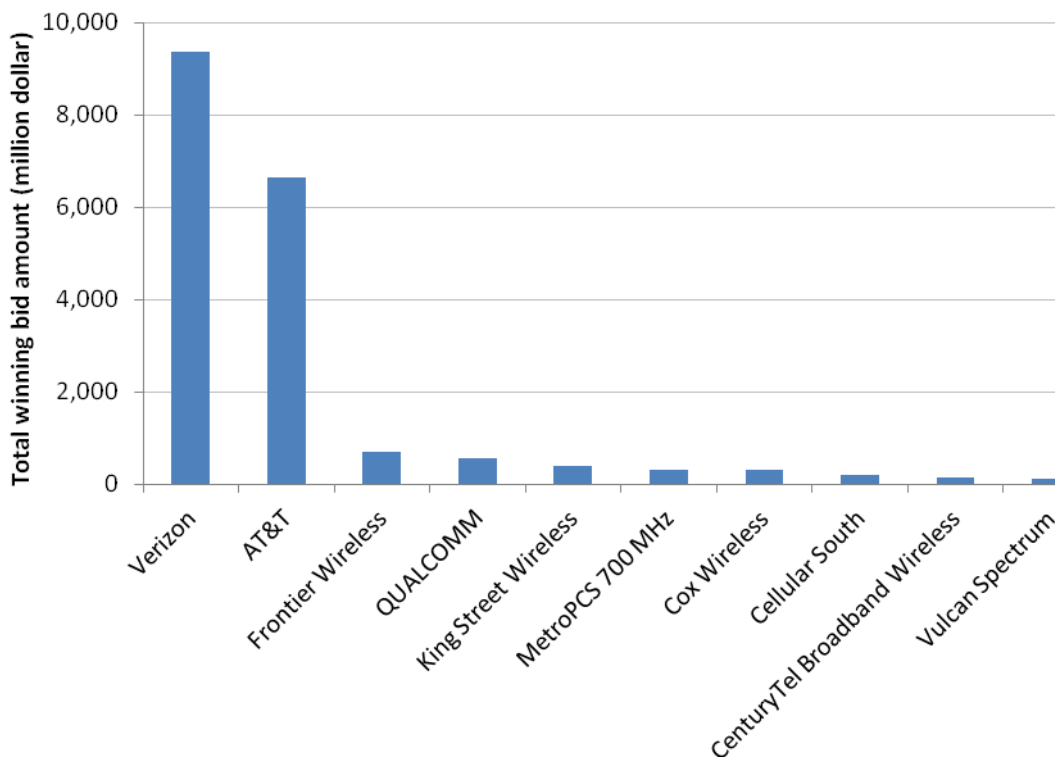


Figure 3. Top-10 bidders by total winning bid amount in US 700 MHz spectrum auction of 2008.

23. Indeed, the simplistic screen has likely motivated Verizon to invest heavily in the low-frequency spectrum. Verizon can weaken the impact of the spectrum constraint by acquiring higher quality spectrum. The better (low-frequency) spectrum enables Verizon to provide more communications at lower cost and therefore gives it a disproportionate spectrum capability under the current unweighted screen.
24. Unfortunately the resulting domination in the low-frequency spectrum is not healthy for competition. It means that Verizon can provide better depth of coverage (inside buildings) and

better breadth of coverage (in less populated areas) at much lower cost than smaller rivals. Customers value the better coverage and many switch to Verizon. This puts Verizon in an even more dominant market position, enabling Verizon to take advantage of further scale economies in network infrastructure, backhaul, and equipment.

25. Other countries have had similar experiences. Market success often hinges on holding spectrum below 1 GHz, since this spectrum allows better coverage. For this reason, regulators in other countries, such as Australia, United Kingdom, France, Germany, Ireland, Italy, Spain, Portugal, Sweden, and Switzerland, have adopted competition policies that recognize the differences among the bands.

A value-based screen is easy to construct and a better measure of capacity

26. An effective way to account for the greater value of spectrum below 1 GHz is to adopt the value-based screen proposed here. This is a simple and common approach to address large value differences. We simply weight the spectrum holdings in each band by relative value. A key advantage of this approach is that it is a straightforward revision of the existing screen.
27. The change clearly provides a better measure of competition concerns, and therefore is an appropriate and essential change in evaluating future spectrum acquisitions, such as Verizon's proposed acquisition. In assessing past transactions, the FCC has routinely made revisions to the screen, whenever the revision would improve the screen's ability to measure spectrum aggregation. The weighting I propose is just such an improvement, and a very important one.
28. To show how easy it is to use a value-based screen, I will construct one. Only a single new input is required: the relative value weights for each band. There is now reliable information on relative values for the various bands. For example, a recent J.P. Morgan analysis provided the following relative values of wireless spectrum:¹

Band	Relative value (\$/MHz-pop)
Cellular	1.70
700 MHz	1.37
PCS	0.76
AWS	0.76
MMDS	0.25
2.5 GHz	0.19

¹ J.P. Morgan, "Spectrum Valuation Overview – Carrier by Carrier Base-Case Spectrum Value Across Wireless Industry," Telecom Services and Towers, North American Equity Research, 30 November 2011.

29. Deutsche Bank equity research estimates values of large spectrum auctions and transactions as follows:²

Band	Year	Transaction	Relative value (\$/MHz-pop)	Average band value (\$/MHz-pop)
700 MHz	2008	FCC Auction 73	1.28	1.07
	2008	Sale of 700 MHz by Aloha Partner to AT&T	1.06	
	2010	Sale of 700 MHz by Qualcomm to AT&T	0.87	
PCS	2005	FCC Auction 58	0.98	0.98
AWS-1	2006	FCC Auction 66	0.54	0.61
	2011	Pending sale of AWS-1 by SpectrumCo/Cox to Verizon	0.67	
2.5 GHz	2007	Sale of 2.5 GHz by AT&T to Clearwire	0.17	0.17

30. The prices per MHz-pop from US AWS-1 and 700 MHz spectrum auctions are shown in Figure 4. These auctions are especially relevant in assessing relative values, since they are the only two major US auctions of mobile broadband spectrum in recent years (AWS-1 in 2006 and 700 MHz in 2008).



Figure 4. Price per MHz-pop in AWS-1 and 700 MHz spectrum auctions.

31. Relative values thus can be assessed from equity research, recent auctions and other arms-length transactions, as well as engineering studies of the capabilities of the different bands. Based on this information, the following value weights seem plausible and even conservative in that if anything they likely understate relative value differences:

² Deutsche Bank, "Key Updates on Major Spectrum Deals," US Telecom Services, Market Research, 5 February 2012.

Band	Value weight
Cellular	1.7
700 MHz	1.5
SMR	1.5
AWS/PCS	.75
BRS	.20

32. These weights are all that is needed in determining and applying the spectrum screen. The table below shows the construction of the value-based screen. It assumes 14 MHz of SMR spectrum, consistent with FCC arguments in the recent decision on the AT&T acquisition of Qualcomm spectrum. It also adds 10 MHz for the PCS G Block.

Band	Price	Weight	MHz	Value
Cellular	\$1.70	1.7	50	85
700 MHz	\$1.37	1.5	70	105
SMR		1.5	14	21
AWS/PCS	\$0.76	0.75	220	165
BRS	\$0.19	0.2	55.5	11
Total			409.5	387
One-third screen			137	129

33. Assuming a trigger equal to one-third of total spectrum value, based on previous FCC decisions triggering the screen at approximately one-third of available spectrum, the screen is found by dividing the total available of 387 (value weighted) by 3, to yield a threshold of 129.
34. One critique of the weighted screen is that it requires the FCC to make a judgment about the relative values of the bands. However, the current unweighted screen implicitly has the FCC making the judgment that all the bands are equal in their capability for providing mobile service—a judgment that all parties, including the FCC and DOJ, agree is wrong. Substituting a reasoned judgment for an incorrect one results in an improved measure of the competitive impact of a carrier’s spectrum holdings. Such judgments are inevitable in setting any spectrum screen.
35. Figure 5 applies the weighted screen to the current spectrum holdings of the top-5 carriers in the top-25 markets. The holdings reflect the recent transfer of spectrum from AT&T to T-Mobile as part of the breakup, as well as the recent AT&T and Qualcomm transaction. Verizon’s holdings are *before* its proposed acquisition of spectrum from SpectrumCo and Cox, but include the Verizon-Leap transaction.
36. Figure 6 shows Verizon’s holdings both *before and after* the proposed SpectrumCo/Cox acquisition. The Verizon acquisition triggers the weighted screen in many major markets, suggesting that the acquisition raises important competition concerns.

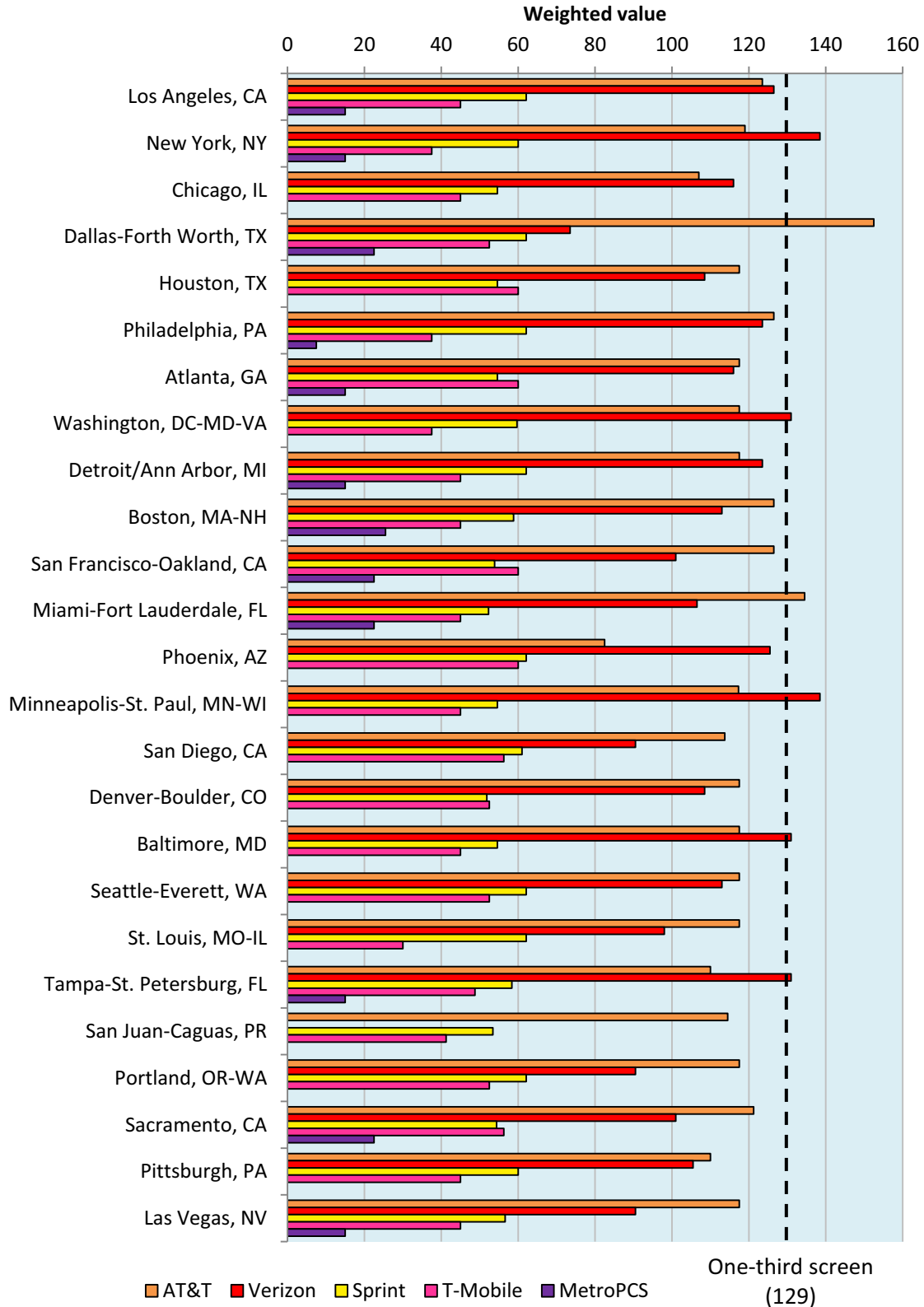


Figure 5. Screen applied to current spectrum holdings of top-5 carriers in top-25 markets.

Note: Verizon holdings prior to the pending Verizon-SpectrumCo/Cox transaction; Verizon-Leap and AT&T-T-Mobile transactions included *pro forma*.

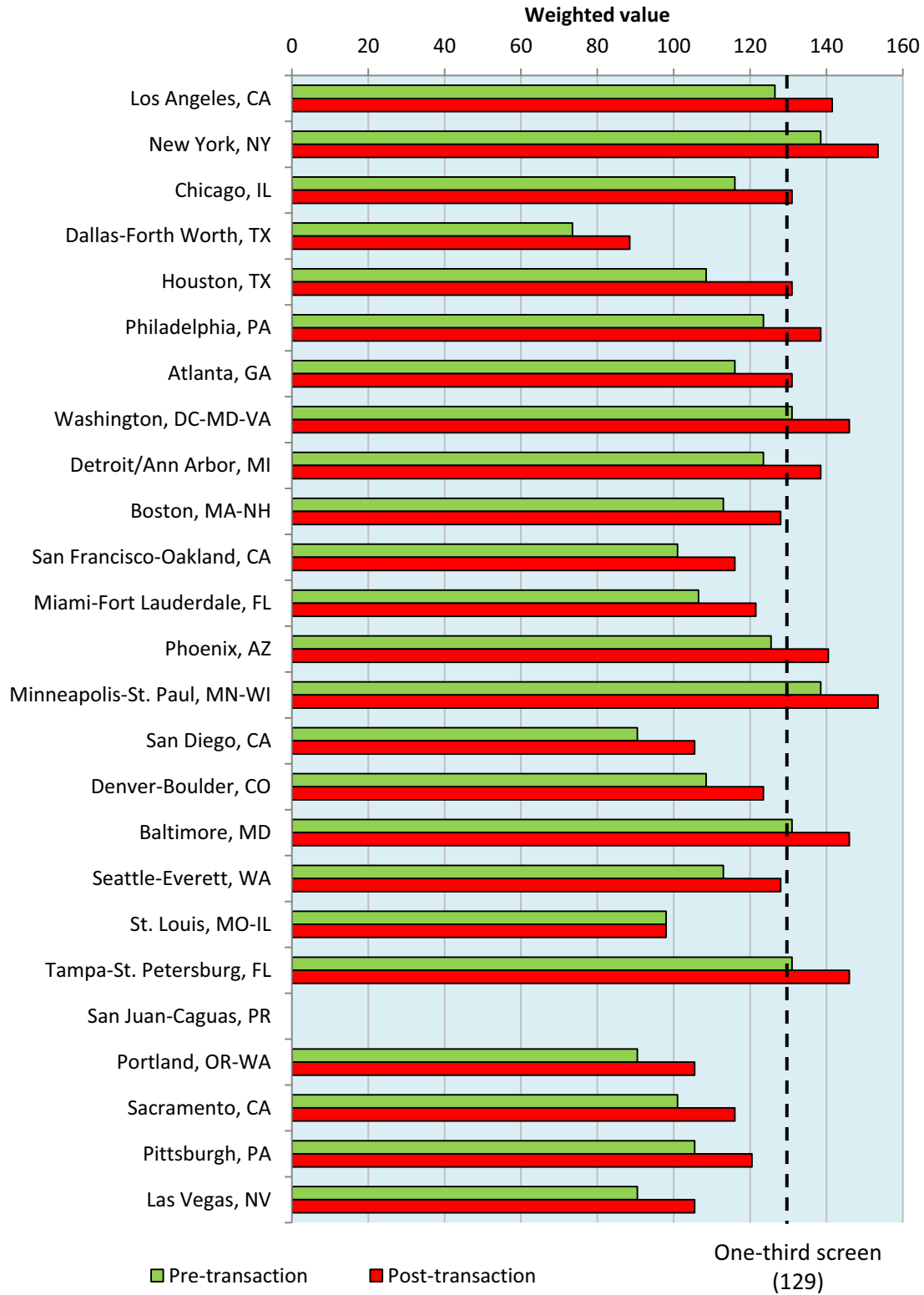


Figure 6. Screen applied to Verizon holdings before and after transactions with SpectrumCo and Cox.

Note: Verizon post-transaction holdings *pro forma* SpectrumCo, Cox, and Leap transactions.

37. Without such value-weighting, the spectrum screen fails to identify potentially harmful concentrations of scarce spectrum resources. Weighting spectrum by value provides a better measure of the market's view of the capability of spectrum resources essential for mobile broadband. With the improved weighted measure, the FCC can safely adjust the screen. With the poor (unweighted) measure, any reduction in the screen level has two undesirable consequences: 1) it encourages greater concentration of the most valuable spectrum as the largest carriers seek to relax the constraint of the screen, and 2) it limits the aggregation of less valuable spectrum by the smaller carriers, which would be an efficient way for them to seek to compete with the holders of "beachfront" spectrum.

Conclusion

38. The current spectrum screen, by treating all spectrum as equal, provides a poor measure of the competitive impact of spectrum acquisitions. The screen is easily fixed by weighting spectrum according to relative values, as is done in other industries. Doing so greatly improves the screen's effectiveness as a diagnostic tool to prevent an excessive concentration of spectrum and therefore safeguard the public interest.

39. With a better measure of competitive impact the improved screen can effectively be adjusted to improve the FCC's approach to identifying markets that need a heightened level of competitive scrutiny, and where divestitures may be required to satisfy the public interest.

I declare under penalty of perjury that the foregoing is true and correct.

A handwritten signature in black ink, reading "Peter Cramton", written over a horizontal line.

Peter Cramton

Executed on 20 February 2012

CERTIFICATE OF SERVICE

I, Kimberly A. Lacey, hereby certify that on this 21st day of February 2012, I have caused a copy of the foregoing **Petition to Deny of T-Mobile USA, Inc.** to be served as specified upon the parties below:

Katharine R. Saunders Verizon 1320 North Courthouse Road, 9th Floor Arlington, VA 22201 katharine.saunders@verizon.com <i>Counsel for Cellco Partnership d/b/a Verizon Wireless</i> (Via Electronic Mail - Redacted Version)	Michael Samsoc Verizon 1300 I Street, N.W. Suite 400 West Washington, DC 20005 michael.samsoc@verizonwireless.com <i>Cellco Partnership d/b/a Verizon Wireless</i> (Via Electronic Mail - Redacted Version)
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/s/ Kimberly A. Lacey
Kimberly A. Lacey